PROCEEDINGS

ONE HUNDRED AND TWENTY SIXTH ANNUAL MEETING

OF THE

UNITED STATES ANIMAL HEALTH ASSOCIATION

HYATT REGENCY HOTEL
HYBRID
MINNEAPOLIS, MINNESOTA
OCTOBER 6-12, 2022
ABOUT USAHA

USAHA’S VISION AND MISSION

The United States Animal Health Association (USAHA) is the leading forum for animal health issues in the United States, promoting active participation from industry, academia, and government. USAHA provides a national venue for stakeholders to identify the most effective methods to protect and improve animal health and welfare and public health.

The United States Animal Health Association develops and promotes sound animal health solutions for the public good.

USAHA MEMBERSHIP

State Official Agency Members (50)

Alabama
Alaska
Arizona
Arkansas
California
Colorado
Connecticut
Delaware
Florida
Georgia
Hawaii
Idaho
Indiana
Iowa
Kansas
Kentucky
Louisiana
Maine
Maryland
Massachusetts
Michigan
Minnesota
Mississippi
Missouri
Montana
Nebraska
Nevada
New Hampshire
New Jersey
New Mexico
New York
North Carolina
North Dakota
Ohio
Oklahoma
Oregon
Pennsylvania
Rhode Island
South Carolina
South Dakota
Tennessee
Texas
Utah
Vermont
Virginia
Washington
West Virginia
Wisconsin
Wyoming

Federal Official Agency Members (11)

USDA, APHIS, Veterinary Services
USDA, Agriculture Research Service
USDA, National Institute of Food and Agriculture
USDA, APHIS, Wildlife Services
USDHS, Centers for Disease Control and Prevention
U.S. Dept. of Homeland Security
USDI, U.S. Fish and Wildlife Service
USDI, National Park Service
USDI, USGS, National Wildlife Health Center
USDOE, Lawrence Livermore National Laboratory
U.S. Forest Service

Territory and Sovereign Agency Members (1)

North Mariana Island

International Animal Health Agencies (4)

Australia*
Canada
Mexico*
New Zealand*

*Not active for 2022
Allied Industry Organizations (38)

Alpaca Owners Association
American Association of Avian Pathologists
American Association of Bovine Veterinarians
American Association of Equine Practitioners
American Association of Small Ruminant Practitioners
American Association of Swine Veterinarians
American Association of Veterinary Laboratory Diagnosticians
American Association of Wildlife Veterinarians
American Association of Zoo Veterinarians
American Cervid Alliance
American College of Veterinary Preventative Medicine
American Dairy Goat Association
American Association of Equine Practitioners
American Farm Bureau Federation
American Goat Federation
American Horse Council
American Sheep Industry Association
American Veterinary Medical Association
Association of American Veterinary Medical Colleges
Association of Fish & Wildlife Agencies
Battelle Memorial Institute
Exotic Wildlife Association
Livestock Exporters Association, USA
Livestock Marketing Association
National Aquaculture Association
National Association of State Public Health Veterinarians
National Bison Association
National Cattlemen’s Beef Association
National Chicken Council
National Dairy Herd Information Association, Inc.
National Institute for Animal Agriculture
National Milk Producers Federation
National Pork Board
National Pork Producers Council
National Renderers Association
National Turkey Federation
North American Deer Farmers Association
North American Elk Breeders Association
Professional Rodeo Cowboys Association
U.S. Poultry & Egg Association
USA Poultry and Egg Export Council

District Delegates
Northeast: D. McElhaney, R. Gibson
North Central: J. Eggers, T. Runyan
South: L. O. Lollis; A. Torres
West: H.M. Richards, B. McCluskey

Individual Members: 709
Life Members: 101
Student Members: 106
# 20222

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I. 2022 Officers and Directors

A. Officers

2021-2022 Executive Committee

Front row (from left): Steve Rommereim, SD, President-Elect; Dustin Oedekoven, SD, President.

Back row (from left): Stephen Crawford, NH, First Vice President; Peter Mundschenk, AZ, Second Vice President; Charles Broaddus, VA, Third Vice President.

Not Pictured: Charlie Hatcher, TN, Immediate Past President; Beth Thompson, MN, Treasurer.
### B. USAHA Board of Directors, 2022

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<td>Alabama Dept of Agric</td>
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<tr>
<td>Robert Gerlach</td>
<td>Alaska Dept of Environmental Conservation</td>
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<td>Pat Long</td>
<td>Alpaca Owners Assn</td>
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<td>Eric Gingerich</td>
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- USAHA/AAVLD Committee on Animal Health Information Systems
- Committee on Animal Welfare
- USAHA/AAVLD Committee on Aquaculture
- Committee on Biologics and Biotechnology
- Committee on Cattle and Bison
  - Subcommittee on Brucellosis
  - Subcommittee on Bovine Viral Diarrhea Virus (BVDV)
  - Subcommittee on Cattle Disease Traceability
  - Subcommittee on Trichomoniasis
  - Subcommittee on Tuberculosis
- USAHA/AAVLD Committee on Diagnostic Laboratory and Veterinary Workforce Development
- Committee on Equine
- Committee on Farmed Cervidae
- USAHA/AAVLD Committee on Food and Feed Safety
- Committee on Foreign and Emerging Diseases
- Committee on Government Relations
- Committee on Global Animal Health and Trade
- USAHA/AAVLD Committee on National Animal Health Laboratory Network (NAHLN)
- Committee on Nominations and Resolutions
- Committee on Parasitic and Vector Borne Diseases
- Committee on Program
- Committee on One Health
  - Subcommittee on Pharmaceutical Issues
  - Subcommittee on Rabies
  - Subcommittee on Salmonella
- Committee on Poultry and Other Avian Species
  - Subcommittee on Avian Influenza (AI) and Newcastle Disease (NDV)
- Committee on Sheep, Goats and Camelids
  - Subcommittee on Scrapie and Identification
- Committee on Swine
- Committee on Wildlife

Rosters of each committee as of the 2022 Annual Meeting are included within each report.

A current listing for committee roster can be found on the USAHA web site, listed under each committee page, respectively.
II. 2022 Annual Meeting Proceedings

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II. A. USAHA/AAVLD Awards Luncheon

WELCOME AND INVOCATION

Dustin Oedekoven and Jerry Saliki

MEMORIAL SERVICE

Stephen Crawford

Colleagues, let us take a moment this evening to humbly pause in our busy lives to remember those that have served with us over the years, but will not be with us this evening because of their passing. Let us keep in mind that life is fragile, but also enjoy the memories, contributions and fellowship that we share that are no longer with us. We wish for strength to their families and friends, and that we carry forward their dedication in the work we do here.

Please take a moment and reflect on these individuals as I read their names:

Joan Arnoldi, WI (May 2022)
Deanna Baldwin, MD (June 2021)
William Buisch, NC (August 2019)
Tony Forshey, OH (November 2021)
Bob Kahrs, NY (November 2021)
AWARDS LUNCHEON SPONSOR’S RECOGNITION

Special Thanks to Our
2022 Awards Luncheon Sponsor,
Trace First, Ltd.

Mr. Michael McGrath
NATIONAL ASSEMBLY AWARD
Presented by Mike Neault

Dr. Valerie Koenig

Valerie is remarkable in her ability to support all 6 New England states in a variety of ways – from epi and state status reports to helping us sort out minutiae like the definition of “commercial” poultry. While there is no doubt she is appreciated here, the state animal health officials of New England believe Dr. Koenig deserves more national attention and recognition.

Working directly with 6 states every day – on unusual diseases, state status reports, or simply day-to-day routine – requires a unique set of skills, and a lot of patience. Valerie delivers the necessary assistance and guidance to all 6 New England states with a smile. She does not grumble about navigating various and eccentric personalities (and state requirements) across the region, and has never appeared unhappy to answer a repeat (or silly) question from the second (or sixth) state.

Dr. Koenig serves constituents far beyond New England in her regular participation in, and deployment with, the Red National Incident Management Team. Valerie usually serves as the Situation Unit Leader, but her varied skills and extensive expertise result in her often supporting the IMT more broadly. As with many other USDA staff deployed on multiple missions over the past year, she also managed to keep up with the daily needs of 6 state animal health officials in her “off” time.

Every job comes with an “other duties as assigned” qualifier. Valerie has used hers to support animal health officials and industry members outside of New England by forcing novel and creative thoughts within an organization not often seen as cutting-edge or forward thinking...

• She led research and implementation of biosecurity practices for the rapidly-expanding world of agritourism, resources useful in in New England and beyond.
Her intellectual curiosity helped tease out answers that were otherwise unclear in USDA communications regarding the process, information, and regulatory framework used by USDA as it considered a novel vaccine for a foreign animal disease.

When the first two bovine EHD cases were identified in New England last year, Valerie was like a kid at Christmas – excited to investigate beyond the immediate epi and obligatory ‘stuff’ associated with bovine positives. She coordinated with ARS and spearheaded follow up conversations with state vector management specialists and the state lab directors. This also led to enhanced tick surveillance in one state and plans for a USDA summer intern – under Dr. Koenig’s mentorship – to study emerging vector competency in the northeast.

Valerie was able to identify a USDA “micro-grant” that may be able to support pathogen testing of banked tick samples to help assess any linkage.

She has offered substantive comments on regional plans and discussions that have led to refinements and improvements of the region’s work.

Valerie consistently pushes decision makers within USDA regarding long standing policies and test protocols, and is not satisfied with the answer “that is how we do it”. Brucella testing hierarchy with our NAHLN labs is an example and a source of ongoing conversation with at least one NAHLN laboratory.

Lest she forget the locals who pester her each day with “other duties”…

• Helping navigate eAuth challenges.

• Coordinating with FSIS to collect surveillance samples from multiple small plants across the region that contribute to maintenance of state disease status.

• Countless, “Remind me again how I am supposed to enter this choose your species and disease information into choose your user unfriendly USDA system…”

In closing, although we all agree Valerie is well suited to be in DC, we heartily oppose any efforts to move her there.
APHIS Administrator’s Award
Presented by Kevin Shea

Mr. Paul Zajicek (right center)
Pictured with Dr. Alecia Naugle, Administrator Kevin Shea, and Dr. Rosemary Sifford.

Paul Zajicek, Executive Director, National Aquaculture Association. Mr. Zajicek earned a Bachelor of Science in Marine Biology (Florida Institute of Technology) and a Master of Science in Agriculture (University of Florida). He was employed for 27 years with the Florida Department of Agriculture and Consumer Services serving as an aquaculture regulatory “extension agent” to explain regulatory intent and compliance to the farming community, argue the farmer’s perspective when state or federal regulations were proposed and led Florida’s “one stop shop” for aquaculture environmental regulations. Paul was a longtime NAA member. He was invited to join the NAA staff in late 2014. He serves a 23 member Board of Directors and provides administrative support for 15 subject matter expert committees (incl. Aquatic Animal Health) to achieve providing national advocacy as One Strong Industry, One Strong Voice for the farming community to Congress and the federal agencies.
AAVLD Distinguished Service Award

Rodger Main, DVM, PhD

The Distinguished Service Award honors those members who have generously volunteered their time, energy, and professionalism to substantially enrich and advance AAVLD and diagnostic medicine.
AAVLD E.P. Pope Award

Francois Elvinger, Dr.med.vet., PhD

This is AAVLD’s highest award, presented to an individual who has made noteworthy contributions to the AAVLD and the field of veterinary diagnostic laboratory medicine.
AAVLD Lifetime Membership Awards

In recognition of longevity as an active contributing member of the AAVLD.

Jim Evermann, MS, PhD

Stephen P Schmidt, DVM, PhD, DACVP
The USAHA Federal Partnership Award is designated for the recognition of a federal employee that has demonstrated commendable service to the betterment of animal health in the United States.

The United States has now seen the second incursion of highly pathogenic avian influenza (HPAI) in less than ten years. When responding to this disease, the state animal health officials (SAHOs), federal regulatory staff, other regulatory officials, the poultry industry, and all associated with the outbreak rely on the National Veterinary Services Laboratory (NVSL) and its personnel for timely, complete and accurate test results. Additionally, as we all work through the "hotwashes" and post-outbreak reviews, we look to those same personnel for assistance in understanding the virus as it relates to the outbreak. The stability and resilience of agricultural industries is dependent on the work of NVSL.

Today, we are pleased to present Dr. L. Mia Kim Torchetti with the 2022 USAHA Federal Partnership award.

Dr. Torchetti is currently the Supervisory Veterinary Medical Officer for the Diagnostic Virology Laboratory: Avian Section Head for the National Veterinary Services Laboratory. Dr. Torchetti has consistently contributed commendable service to the betterment of animal health in the United States. She has demonstrated this service for many years, and importantly, including times of animal health emergencies, notably the 2015 and 2022 HPAI outbreaks.

She continues to contribute to several collaborative efforts, not only within USDA and but also with industry partners and internationally.

In addition to her leadership with the Diagnostic Virology Laboratory, she is also recognized by The World Organization for Animal Health as a laboratory expert for Avian influenza, Swine influenza and Newcastle disease. She also serves on the Advisory Board for the Poultry Respiratory Disease Coordinated Agricultural Project (PRD-CAP) and the Network Executive Committee for the Centers of Excellence for Influenza Research and Surveillance (CEIRS).

Response to endemic and foreign animal diseases is prompted and partially driven by diagnostic testing and laboratory work. Dr. Torchetti has been a true partner in response to HPAI, and an exemplary collaborator in many other areas of animal health, for many years.
USAHA Medal of Distinction Award
Presented by Dr. Dustin Oedekoven

The USAHA Medal of Distinction is awarded annually to recognize one or more distinguished USAHA members who have demonstrated outstanding leadership, provided exemplary service, and have made significant contributions to the advancement of the Association.

Today, it is our honor to award the Medal of Distinction to two candidates, both of whom have had impactful careers and served important roles for USAHA.

Our first honoree comes to us from the state of California, and has been a familiar face in all things USAHA and related. Dr. Annette Jones is the California State Veterinarian and Director of the Animal Health and Food Safety Services Division there, a role she has had since 2010. She has been with the state since 2001, following a time in private practice as well as a previous life as a business analyst and business manager for large firms.

Today, however we are pleased to recognize her for what she means to USAHA. Dr. Jones was elected treasurer in 2011, serving on the Executive Committee for 8 years through 2019. Through that time, Dr. Jones demonstrated her leadership abilities wherever needed. Her innovative thinking provided important direction for the work of USAHA. Her background in business was instrumental in helping to evolve many of USAHA’s financial practices and making sure USAHA continued to be in sound financial standing, with transparency and common sense.

Likewise, her experiences as State Veterinarian contributed greatly to the topics of USAHA’s interest. She offered a balanced and fair-minded approach to the conversation with the ability to recognize and ask the tough questions. Dr. Jones was also never afraid to offer a hand to get things done, exercise her extensive contact list, or provide a solid foundation for executing a new initiative.

Her resume as a state animal health official supports her abilities, from leadership in disease outbreaks such as exotic Newcastle Disease, managing disease risk for California’s diverse animal agriculture landscape, to navigating the legislature and political climate.

Dr. Jones has previously served as Treasurer of the National Assembly of State Animal Health Officials (NASAHO) as well as President of NASAHO, and is no stranger to the awards podium.

We are pleased to have her contributions and all that she continues to bring to this organization.

Thank you, and congratulations Annette.
Our second awardee hails from the other side of the country. He is often recognized by his bright Clemson orange.

Dr. Boyd Parr contributed significantly to USAHA over the years and to the Southern Animal Health Association, serving as President of both organizations. He advanced the USAHA through direct leadership while serving on the Executive Committee and as President in 2016-2017. He has also offered his institutional knowledge informally by providing advice and guidance to the association regarding committee chairs, executive committee members, and new members. He has a keen eye for detail and a robust memory that has proved invaluable to USAHA numerous times over. One of his best qualities is how he has supported mentoring newer state animal health officials and members of USAHA to become engaged in organized veterinary medicine for the benefit of the producers we serve.

Dr. Parr comes to the association with a long history and experience in the dairy industry, having served clients in his native state of South Carolina for 26 years before joining Clemson University where he would eventually serve as the State Veterinarian. For 17 years, he developed a reputation as a fair, thoughtful leader who would work tirelessly to advance animal agriculture interests. He led efforts to promote the Secure Milk Supply program and other iterations of the Secure Food Supply Program. Over the course of his career, he has been highly involved in Avian Influenza planning and response. He is an excellent communicator, and before retiring last year, he frequently and effectively worked with USDA partners to achieve success in animal disease planning and response efforts.

Dr. Parr has been recognized for his service by many of organizations he has served, and we are pleased to add USAHA to his list of accolades. He is a true advocate for this association.

While Dr. Parr is officially retired, he continues to work at Clemson University, serves on the AVMA Council of Health, and is imparting the essential instructions to his six grandchildren on where the ice cream freezer is located, how to drive the Kubota and tractor, how to plant and harvest various garden vegetables, and how to watch their favorite cartoons.

Thank you and congratulations, Boyd.
II. B. USAHA/AAVLD PRESIDENTS
DINNER AND KEYNOTE

WELCOME TO MINNESOTA

Thom Peterson, Commissioner of Agriculture

SPONSOR’S ADDRESS

Dr. Doug Ensley, Boehringer Ingelheim
It has been a great honor and privilege to serve as president of the US Animal Health Association, now in its 126th year.

Now, I can’t speak personally of the accomplishments of the past 126 years; this is only my 20th USAHA Annual meeting. But even in just 20 years, there is plenty to reflect on:

I attended my first USAHA meeting at the Town & Country Hotel in San Diego. By a show of hands – how many of you were there? Ok, Now I know not all of you enjoyed the Town & Country as much as I did, but the weather was always nice and you got plenty of exercise and sunshine, because it was somewhat easy to get lost among the palm trees between the various buildings where the meetings were held.

People were so friendly and helpful to guide me where I needed to be. I recall a young man who quietly supported the operations at that meeting. You’d see him taking pictures and making sure everything was running alright.

Now that young man has a graying beard and has been our Executive Director for the past 16 years! Thank you Ben. And thanks also to Kelly Janicek, our Executive Assistant who continues to provide such valuable service to our members. (Give them a hand.)

Hey Ben – what’s the WiFi password again?

At my first annual meeting as a staff veterinarian working for Dr. Sam Holland, one of my duties was to check the front desk for faxes from the office back home, and help Sam get dial-up internet so he could check his e-mail. Ok, for those of you who may not have been around for that, we actually connected a telephone cord from the computer to the wall and…… wait, you don’t know what a telephone cord is?

You know what, never mind.

The point is that now you all have more data storage in the palm of your hands, connected to people and a meeting app and information of all kinds. Even while I’m talking, some of you aren’t even listening to me……probably revising draft resolutions for committees. TB Bob used to do that on the back of a napkin.

Speaking of committees…we’ve had a lot of changes there over the past 20 years as well.
The Johne’s committee, with all its subcommittees and working groups, spanned 3 days at my first USAHA meeting. And while Johne’s disease still exists, that committee was scrapped years ago. Scrapie has nearly been eradicated! And so scrapie is now a subcommittee. At one time we thought maybe trich needed its own committee, but now we wonder if we still need a trich subcommittee.

USAHA has a joint Committee with AAVLD on NAHLN. NAHLN was a budding concept at my first meeting, and now in its 20th anniversary, the NAHLN system is operational and continually growing to support the needs of animal health, public health, food safety, and more. I can’t imagine where we’d be without it. Congrats to our NAHLN partners, and thank you AAVLD for your continued partnership with USAHA.

At one time there was a celebration being planned at a USAHA meeting to declare the eradication of brucellosis from the U.S. cattle herd. Jim Logan would remember when that was. That celebration was cut short when routine herd testing found an emerging case, just prior to the annual meeting. Still, brucellosis seems to be well-controlled and restricted to the Greater Yellowstone Area.

TB was a dairy problem. And then it was a deer problem. It was in MI, then, TX, then... I lost track of all the places tb popped up. And while there have been multiple attempts to revise tb regulations, the federal tb rule is finally... well... It’s still a work in progress.

New diseases emerged, some re-emerged, and outbreaks were dealt with – PED, Seneca virus, monkeypox, Rabbit Hemorrhagic Disease, CWD, SARS Cov2, HPAI, Tb, and on and on.... There’s never been a quiet year or a shortage of a crisis to solve.

And new acronyms keep coming!

Remember this? Twenty years ago, USAHA was discussing the USAIP! (That’s the United States Animal Identification Plan), which morphed into NAIS (National Animal Identification System), and was finally implemented as ADT (Animal Disease Traceability.) 10 years later, we’re still talking about how to improve traceability to aid in disease response.

Anyone want to take bets on the Next Gen Traceability Acronym?

Over 20 years, we’ve wrestled with concerns that the meeting is too long, (pause)

Until it was too short. And now we’re just darn happy to be back together again!

Speaking of being back together again, it’s great to have our USDA members and other federal partners, back at our annual meeting! And Congrats to APHIS on your golden anniversary. (Give them a hand.)

In 20 years, there has been a near complete turnover of state veterinarians, save for Drs. Marsh, Watson, and Frazier. Thank you to all our state animal health colleagues, whether newly minted or finely aged.

Yes, I’ve witnessed a lot of change in our organizations over the past 20 years, and yet some things remain the same. One thing that hasn’t changed, is the vision to serve as the leading forum for animal health issues in the United States, promoting active participation from industry, academia, and government. And we recognize now more than ever the importance of gathering to share information, guide policy, and recognize the achievements of our colleagues.

Thanks to our sponsors. We appreciate your steady support of this organization more than we express, and we wouldn’t be the same without your generosity. Thank you.

Now a few personal notes: Thanks to the South Dakota Animal Industry Board and staff, and now the National Pork Board and staff, as they have supported me in making the time commitment to serve USAHA.
Thank you to the Executive Committee. Like any good team, they support one another to get the job done, and I’m in awe of their individual and collective talents. I’m so appreciative of current and past leadership of the organization who have set it up for success – even so well as to weather the storms of the global pandemic. It hasn’t been easy finding our way through the past couple of years, but I know that each of you have lived that out in many different ways.

Finally, I’m appreciative to my wife Jenn and family. As all of you know, being here to work together on these issues that are important to animal health, public health, and food safety, takes us away from those whom we love and care for. I’ve been blessed to have such great support from my family.

It’s been an honor to serve as your president, and I look forward to what the next 20 years will bring. Thank you.
I have been a member of AAVLD for 30 years and this is my 31st consecutive meeting. I feel very fortunate to have been chosen to serve as President of the AAVLD over the past 12 months. When I reflect on my role within this organization, I remember Stacey King, Michael Jordan’s rookie teammate, who, after Michael hit a career high in a 1990 Chicago Bulls win, said at the post-game press conference, quote: “I will always remember this as the night that Michael Jordan and I combined to score seventy points”. Guess how many points Stacey scored! – one! And Michael scored 69.

What has that got to do with AAVLD?

“Well, I will always remember 2022 as the year in which hundreds of AAVLD members and I combined to keep AAVLD strong”. Although my contributions have been truly miniscule when placed in the grand scheme of things, I am proud to have served alongside this group of phenomenal individuals. After serving our organization in a few roles over the years – Accreditation Committee member, JVDI Editor-in-Chief for 11 years and regional representative on the Executive Board - I thought I had a good understanding of the inner workings of the AAVLD. Boy, was I wrong! My three years of service as VP, P-elect and P have shown me quite a different picture.

From the Executive Board through the various committees to the JVDI, AAVLD is served by a cadre of the most selfless and talented volunteers you can have on the planet. Did you know, for example, that AAVLD has 9 standing committees and 29 special committees? That makes a total of 38 committees made up of approximately 300 people serving our organization on a continuous basis. Without hesitation or prompting, hundreds of you dedicate your time and talents to serving this organization. From the bottom of my heart to all members who selflessly serve the AAVLD, thank you for all you do to keep our organization so strong. To those who are new to the organization and those who have never served for one reason or another, I encourage you to join one or more committees. Service in this organization will strengthen you in your jobs and life as a whole.

Over the past year, I am especially satisfied with the following initiatives and activities of AAVLD:

First, the Lab Employee Compensation survey was envisioned to become an ongoing activity of AAVLD to be conducted at intervals to be determined by the Executive Board. The first year survey was designed, administered and collected data analyzed. At a time when the labor market is so tight, it is my hope that this data will help us in our
various states to make the case for better compensation for our hard-working people. A special thank you to Dr. Bruce Akey, this project’s consultant and to all Lab Directors for participating massively in providing data.

Second, ongoing strengthening of the relationship between AAVLD (representing the state animal health diagnostic labs) and USDA/NVSL – as we are in the final stages of signing our 5th MOU, which reiterates the firm commitment of the State and Federal lab systems to work together as strategic partners to provide nothing but excellent animal diagnostic services to our stakeholders. A special thank you to Dr. Suelee Robbee-Austerman and Dr. Christy Loiacono.

Third, the strengthening of our excellent and comprehensive AAVLD Lab Accreditation program and its current evolution to make the Accreditation Committee eventually become an ISO 17011 accrediting body, similar to A2LA. It is a process that will take a few years, but will ensure ongoing excellence and expanded recognition of our accreditation program. Special thank you to retired Accreditation Committee chair David Korcal who co-launched this effort with current co-chair Dr. Amy Swinford, who are now shepherding the effort.

Last but not the least, I am proud of our organization’s efforts to ensure we remain as open, inclusive, and diversified as I believe we have been in the past, by working with our newest committee, the Diversity, Equity and Inclusion Committee chaired by Drs. Cat Barr and Amar Patil, who were received the 2022 President’s award yesterday.

I would like to conclude by thanking all AAVLD members with whom I have served for the past 30 years. Your mentorship, encouragements, and support have helped me grow tremendously in my professional and personal life. Speaking of personal life, I could not have served this organization for so long without the strong love and unwavering support of my wife, Philomene, our six children, and four grandchildren. I believe that behind every successful person is a supportive family. On behalf of AAVLD, I thank you from the bottom of my heart for sacrificing so much of our family time to allow me serve this noble organization for so many years.

Thank you all for listening and I wish you a pleasant time through the remainder of this evening and the rest of the meeting, and a safe return to your various homes at the end of the meeting.

Long live AAVLD!
Peter Zeihan is an expert in geopolitics: the study of how place impacts financial, economic, cultural, political and military developments. He presents customized executive briefings to a wide array of audiences which include, but are not limited to, financial professionals, Fortune 500 firms, energy investors, and a mix of industrial, power, agricultural and consulting associations and corporations. Mr. Zeihan has been featured in, and cited by, numerous newspapers and broadcasts including The Wall Street Journal, Forbes, AP, Bloomberg, CNN, ABC, The New York Times, Fox News and MarketWatch.
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II. C. Joint Scientific Session Papers, Abstracts and Posters

1. Papers and Abstracts

Genetic Diversity of Mannheimia haemolytica isolates from bovine respiratory disease cases in Missouri – H. Kittana

Ornithobacterium rhinotracheale-associated extra-respiratory disease in turkeys: retrospective analysis of 13 cases – D. Hernandez

Isolation of Trueperella abortisuis in swine herd abortions. Is this an emerging pathogen? – A. Ozuna

Detection of viral and bacterial pathogens in postmortem lung specimens from bovine respiratory disease cases at the University of Missouri Veterinary Medical Diagnostic Laboratory, 2019-2021 – R. Ierardi

Collection of host-seeking Dermacentor variabilis, vector of bovine anaplasmosis, on beef cattle pastures in Missouri – R. Ierardi

A prospective seroprevalence survey of Anaplasma marginale among Missouri beef cows, 2021-2022 – R. Ierardi

Characterization of SARS-CoV-2- specific neutralizing monoclonal antibodies in vitro and in vivo – D. Bold
GENETIC DIVERSITY OF MANNHEIMIA HAEMOLYTICA ISOLATES FROM BOVINE RESPIRATORY DISEASE CASES IN MISSOURI
Hatem Kittana\textsuperscript{1}, Anthony J Ogunbadewa\textsuperscript{2}, Michael Calcutt\textsuperscript{2}, Tamara Gull\textsuperscript{2}, Solomon O (Wole) Odemuyiwa\textsuperscript{2}

\textsuperscript{1}Veterinary Pathobiology, Texas A&M University, Canyon, TX; \textsuperscript{2}Veterinary Medical Diagnostic Laboratory, University of Missouri-Columbia, Columbia, MO

\textit{Mannheimia haemolytica} (MH) is the most frequently isolated bacterium from the lungs of cattle with bovine respiratory disease complex. Capsular serotype and expression of leukotoxin A (lktA) correlate with pathogenicity in MH isolates. We investigated the genetic diversity of MH isolates in diseased lungs of cattle submitted to the VMDL.

MH isolates were identified using MALDI-TOF and probed with primers specific for MH and lktA genes. Primers specific for serotypes 1, 2, and 6 were used to type isolates. Isolates negative for lktA and MH were subjected to whole genome sequencing.

MALDI-TOF identified 95 isolates were identified as \textit{M haemolytica} and four as \textit{M varigena} (MV). Two isolates, \textit{Salmonella enterica} and \textit{Pseudomonas gessardii}, served as negative controls. Of 95 isolates identified as MH, 3 (3.2\%) were non-hemolytic; two of four MV isolates were hemolytic. MH-specific primers confirmed 83 (90.2\%) of hemolytic MH isolates (MH\textsuperscript{+}). LktA gene was confirmed in 73 (88.0\%) of MH\textsuperscript{+} isolates. Serotype-specific primers typed 24 (32.9\%), 7 (9.6\%) and 14 (19.2\%) of 73 beta-hemolytic LktA\textsuperscript{+} MH isolates as serotypes 1, 2, and 6, respectively. While 4 (5.6\%) samples were not typable, serotype classification of 24 (32.9\%) samples was ambiguous since they tested positive for both serotype 1 and 2. Twenty isolates that could not be unambiguously typed as beta-hemolytic, LktA-expressing, MALDI-TOF positive MH were further characterized using whole genome sequencing. Initial analyses showed that 14 of the isolates were \textit{M haemolytica} while 3 were \textit{M varigena}; 3 isolates were unclassifiable. Of the 20 isolates, 5 had multidrug resistance genes for five different groups of antibiotics. We identified plasmids and mobile genetic elements (MGE) that may play a role in horizontal gene transfer.

This study showed the presence of a heterogeneous population of \textit{Mannheimia} species in lung tissues submitted to our laboratory from Missouri cattle with respiratory disease. The presence of MGE is a significant finding that may contribute to the spread of antibiotic resistance to other bacterial species.
ORNITHOBACTERIUM RHINOTRACHEALE-ASSOCIATED EXTRA-RESPIRATORY DISEASE IN TURKIES: RETROSPECTIVE ANALYSIS OF 13 CASES

Daniela Cecilia Peña Hernandez¹,², Grant N Burcham ¹,²,³, Kenitra Hendrix¹,²

¹Comparative Pathobiology, Purdue University College of Veterinary Medicine, West Lafayette, IN; ²Indiana Animal Disease Diagnostic Laboratory, West Lafayette, IN; ³Heeke Animal Disease Diagnostic Laboratory, West Lafayette, IN

Ornithobacterium rhinotracheale (ORT) is well-known as a respiratory pathogen of turkeys. A few reports of systemic ornithobacteriosis are present in the literature, but no focused studies on this clinical presentation are available. This study aimed to describe the clinical, microbiological, and pathologic findings associated with systemic ornithobacteriosis. Through retrospective analysis, 13 cases in which ORT was isolated from non-respiratory tissues in growing meat turkeys were identified. Cases were received at the Heeke Animal Disease Diagnostic Laboratory (ADDL) in southern Indiana and spanned from December 2019 to May 2022. All ORT isolates were initially identified via biochemical methods, with 7/13 confirmed via MALDI-TOF analysis.

The age of the affected flocks varied from 34-104 days old. From the 13 cases, a total of 21 specimen pools yielded ORT when cultured aerobically, including 14 pools of non-respiratory organs. ORT was isolated from joints (7 cases), liver (5), spleen (1), and pericardium (1). ORT was isolated as a pure culture or as the dominant organism in 85.7% of positive specimens. ORT was recovered from mixed growth in two cases - involving liver and pericardial swab - among E coli, Enterococcus faecalis, and Enterobacter sp. For cases in which respiratory tissues were also submitted for culture, ORT was isolated from respiratory tissues in 5/8 instances. During the analyzed period, a total of one hundred and thirty-eight specimens had positive or suspected ORT culture results. The 13 cases described here represented 9.6% of ORT isolates obtained in the lab during the 29-month period.

From turkeys in which ORT was isolated from non-respiratory tissues, gross findings (6 cases) included swollen hocks, unspecified synovitis, caseous synovitis, hepatomegaly, and necrotizing hepatitis. Histologic lesions (same 6 cases) from affected tissues included lymphohistiocytic hepatitis, hyperplastic tenosynovitis, and heterophilic epicarditis. Comorbidities diagnosed at the time of ORT culture included bordetellosis (3 cases), colibacillosis (3), reoviral tenosynovitis (2), and crop mycosis (1). In 5/13 cases, no other pathogen was diagnosed. Twelve out of 13 flocks had accessions to the ADDL prior to isolation of extra-respiratory ORT. Three flocks were previously diagnosed with respiratory ornithobacteriosis, four with bordetellosis, four with systemic colibacillosis, two with bacterial tracheitis and airsacculitis of unknown etiology, and one with ocular aspergillosis.

ORT was associated with disease outside the respiratory tract in 13 separate instances over the study period, including almost 10% of all ORT isolations. These findings indicate that this pathogen is associated with systemic disease in domestic turkeys.
Trueperella abortisuis (formerly Arcanobacterium abortisuis) is a Gram-positive coccobacillus belonging to the Arcanobacteriaceae family and was first isolated in abortion cases of swine in Japan, followed by abortion cases in Spain and the United Kingdom, where this organism is an emerging pathogen. T. abortisuis has been identified in the semen of boars in the United States but has never been isolated from porcine abortions in the US. Based on current knowledge, this organism may play a role as an emerging pathogen in swine abortion cases in the US, either as a primary pathogen or in conjunction with other microorganisms of the female reproductive tract. In this report, T. abortisuis was consistently identified in uterine samples, placenta, and fetal tissues from multiple swine abortions in three unrelated production systems in Midwest United States (US). T. abortisuis was isolated by aerobic bacterial cultures and MALDI-TOF MS, as well as metagenomic analysis. Affected herds showed signs of reproductive failure, characterized by a decrease conception rate of up to 12%, repeated cycles, purulent secretion from vulva, and/or abortions between 27-50 days of gestation. Sows and gilts did not display any other clinical signs. Gross and histopathology examination of placenta, uterus, and fetal lung tissues revealed severe necrotizing and purulent placentitis in numerous sows, and suppurrative pneumonia in one aborted fetus, with large numbers of Gram-positive coccobacilli in all cases. In all affected tissues, T. abortisuis was isolated with normal flora. Common abortigenic pathogens of swine were ruled out by molecular testing, ELISA testing, and aerobic and anaerobic bacterial cultures. This report suggests T. abortisuis should be a differential diagnosis for swine reproductive failure and abortions in which purulent discharge is observed. Further research should be performed to determine the potential role of this pathogen in swine abortions and reproductive failure.
DETECTION OF VIRAL AND BACTERIAL PATHOGENS IN POSTMORTEM LUNG SPECIMENS FROM BOVINE RESPIRATORY DISEASE CASES AT THE UNIVERSITY OF MISSOURI VETERINARY MEDICAL DIAGNOSTIC LABORATORY, 2019-2021

Rosalie Ierardi1, Tamara Gull1, Solomon O (Wole) Odemuyiwa1, Morgan Stansell2

1Veterinary Medical Diagnostic Laboratory, University of Missouri College of Veterinary Medicine, Columbia, MO; 2Division of Animal Sciences, University of Missouri College of Agriculture, Food & Natural Resources, Columbia, MO

Bovine respiratory disease (BRD) is one of the most important health conditions of beef cattle. Most research on BRD is focused on feedlots, but this disease is an important challenge to cow-calf producers as well. Missouri is one of the top cow-calf producing states in the U.S. This report describes viral and bacterial pathogens recovered from BRD cases diagnosed at the University of Missouri Veterinary Medical Diagnostic Laboratory (VMDL) from January 1, 2019 to December 31, 2021.

During this three-year period, 386 cases of bovine pneumonia were diagnosed by a pathologist or identified as such by the referring veterinarian with subsequent detection of a primary BRD pathogen. Primary BRD pathogens were defined as *Mannheimia haemolytica*, *Pasteurella multocida*, *Histophilus somni*, bovine viral diarrhea virus (BVD), bovine respiratory syncytial virus (BRSV), bovine parainfluenza virus 3 (PI3), or bovine herpesvirus 1 (BHV-1). Cases were only included if postmortem lung tissue was evaluated. Swabs were not considered in this analysis.

Aerobic culture of lung was performed in 382 of 386 cases. In 27.5% of cultured cases, no significant pathogens were isolated. Significant bacterial isolates included *M* *haemolytica* alone in 25.1%, *H somni* alone in 12.6%, and *P multocida* alone in 8.9%. In 17.8% of cases, two or more of *M haemolytica*, *P multocida*, and/or *H somni* were isolated concurrently. The remaining 8.1% of cases were consistent with systemic infections (e.g., septic calves with *Salmonella* spp. isolated from multiple organs) or with secondary opportunists such as *Trueperella pyogenes*, *Bibersteinia trehalosi*, and/or *Fusobacterium necrophorum*.

A complete respiratory PCR panel for BVD, BRSV, PI3, and BHV-1 was performed on 340 of 386 cases. In 80.6% of cases, no virus was detected. The most commonly detected viruses, either alone or in combination, were BRSV (12.1%) and BVD (7.6%). Additionally, *Mycoplasma bovis* was detected in 55.4% of the 112 cases in which PCR was performed. This should be interpreted with caution as *M bovis* PCR is typically requested at the pathologist’s discretion and is not automatically included in the standard respiratory panel.

During the same period, the detection rate of BVD persistent infections was 0.3% among 4,371 ear notches tested via immunohistochemistry or antigen capture ELISA, depending on the client’s request. These numbers include out-of-state submissions and generally reflect previously reported industry averages.

Etiologies of BRD detected in bovine lung submissions to the VMDL, which overwhelmingly represent cow-calf operations, are broadly similar in relative proportions to those previously reported in feedlot cattle.
Bovine anaplasmosis is an economically significant disease of cattle, with impacts including weight loss, spontaneous abortions, and death. The primary arthropod vector of anaplasmosis in the Midwest is the American dog tick, *Dermacentor variabilis*. Our research seeks to determine the prevalence of *Anaplasma marginale*, the causative agent of bovine anaplasmosis, among host-seeking *D variabilis* ticks in Missouri. To this end, ticks are collected at regular intervals from pastures on four beef grazing operations, each in a separate geographic region of Missouri. Pastures in our study are actively grazed by cattle and consist primarily of open grassland, with areas of grassland-woodland edge habitat. Ticks are collected with flannel drags over 750-meter transects, according to previously published methods.

Following 38 collection attempts on 10 days in May and June 2022, 166 ticks have been collected. The most frequently encountered species during these attempts is the lone star tick, *Amblyomma americanum* (69.9%), followed by *D variabilis* (30.1%). Collected *A americanum* include 6 adult females, 12 adult males, and 98 nymphs. Collected *D variabilis* include 28 adult females and 22 adult males.

Tick host-seeking behavior is influenced by a variety of factors including climatic and weather conditions, land cover, and host density. From each study site, hourly measures of precipitation, air temperature, relative humidity, and wind speed are recorded from onsite data loggers to identify abiotic drivers of tick abundance and phenology at these sites.

In our study, *D variabilis* represents 30.1% of ticks collected thus far, whereas previous studies in north-central Missouri report *D variabilis* accounted for only 1% to 14% of ticks collected. This may be an effect of collecting from open grassland, instead of primarily forested areas as in the previous studies. Our findings indicate substantial local variation in tick composition depending on the site sampled. The site in north-central Missouri has yielded almost exclusively *D variabilis*, while sites in eastern and southwestern Missouri have yielded almost exclusively *A americanum*.

To determine the prevalence of *A marginale* in host-seeking *D variabilis* ticks, our next steps involve nucleic acid extraction from collected ticks and real-time PCR to detect *A marginale*. Tick collection will continue until a sufficient sample size has been achieved.
Bovine anaplasmosis is an economically significant disease of cattle, with impacts including weight loss, spontaneous abortions, and death. Contemporary information about the epidemiology of this disease in Missouri is limited. Here, we present the preliminary results of an ongoing prospective serosurvey to evaluate the period prevalence of antibodies against Anaplasma marginale in serum from apparently healthy adult beef cows in Missouri. Given the lifelong persistence of most A. marginale infections, seroprevalence is a reliable estimate of the proportion of carrier cattle within a population.

Samples were collected from November 2021 through June 2022. Serum was collected with client consent by each herd’s local veterinarian during a routine visit. Samples were tested at the University of Missouri Veterinary Medical Diagnostic Laboratory using a commercially available A. marginale competitive ELISA (cELISA). A positive result was defined as ≥30% inhibition. Of the 509 individual cattle that were tested, 243 (47.7%) were seropositive. Thirty-two of 33 tested herds (97.0%) had at least one positive animal. Herds are located in 19 counties throughout Missouri.

Participating clients completed a questionnaire which included 38 questions on herd characteristics, management practices, and client perceptions of anaplasmosis disease risk. Questionnaire responses indicated that most producers own cow-calf operations (93.5%) and describe their cattle as “commercial” or “a mixture of commercial and purebred” (90.3%). The median herd size in the survey was 58 cows.

Of the 29 producers with open herds, 27.6% reported testing new cattle for infectious diseases before they were introduced to the herd. None reported testing for anaplasmosis. Eighteen producers (58%) reported seasonal feeding of chlortetracycline in a medicated mineral mixture for the control of anaplasmosis. One producer reported current use of the anaplasmosis vaccine, with a perceived reduction in clinical cases; however, only 4 of 15 cows tested in this herd had a positive antibody titer according to the cELISA. Eight producers (25.8%) reported changing needles between every animal, which is higher than expected and likely reflects selection bias (i.e., producers who volunteer for the study are likely to be concerned about anaplasmosis and may be attempting to reduce transmission in their herds).

Results from the serosurvey confirm that bovine anaplasmosis is prevalent and widespread in Missouri. This serosurvey will continue through the fall of 2022.
CHARACTERIZATION OF SARS-COV-2- SPECIFIC NEUTRALIZING MONOCLONAL ANTIBODIES IN VITRO AND IN VIVO
Dashzeveg Bold\textsuperscript{1}, Ebony Gary\textsuperscript{2}, Natasha Gaudreault\textsuperscript{1}, Konner R Cool\textsuperscript{1}, Jessie Trujillo\textsuperscript{1}, Igor Morozov\textsuperscript{1}, David B Weiner\textsuperscript{2}, Juergen Richt\textsuperscript{1}

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\textsuperscript{2}Vaccine and Immunotherapy Center, Wistar, Philadelphia, PA

The spike protein of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the main target for neutralizing antibodies. Neutralizing antibodies can be induced via natural infection or immunization; they can also be passively transferred as therapeutics using hyperimmune sera or monoclonal antibodies (MAbs). Here, we demonstrate that the 31F4 and 15G1 mouse MAbs specific for the SARS-CoV-2 spike receptor binding domain (RBD) have high neutralizing activity against the ancestral Wuhan-like USA-WA1/2020 SARS-CoV-2 strain and several SARS-CoV-2 variants of concern (VOCs) \textit{in vitro}. Next, we tested their therapeutic potential for SARS-CoV-2 in a COVID-19 Syrian golden hamster model. For this purpose, groups of hamsters (n=6) were treated intraperitoneally with 2 mg each of the respective MAbs on -1 day post challenge (DPC) and +1 DPC. Animals were challenged intranasally with 1x10^5 TCID50 of SARS-CoV-2 (USA-WA1/2020). Three of the hamsters from each group were humanely euthanized for postmortem analysis at 3 DPC and the remaining hamsters at 5 DPC.

The two groups of MAb-treated hamsters did not lose weight and only showed minor lung lesions on days 3 and 5 after SARS-CoV-2 infection. Furthermore, most (11/12) of the Mab-treated hamsters did not shed virus on 3 DPC, and significantly lower levels of virus were detected in nasal washes of 4/6 hamsters at 5 DPC compared to the control group. In contrast, hamsters in the placebo control group lost about 20% body weight within five days of infection, and all control hamsters shed virus at 3 and 5 DPC.

Our results show the RBD-specific MAbs 31F4 and 15G1 are able to effectively neutralize several SARS-CoV-2 strains including VOCs. In addition, they are able to protect Syrian golden hamsters from SARS-CoV-2 associated clinical signs and significantly reduced virus shedding. This indicates the RBD-specific MAbs 31F4 and 15G1 might have therapeutic potential to protect humans and animals from SARS-CoV-2 infections.
II. C. 2. Posters

*Canine parvovirus variants in Missouri: 2012 – 2022* – A. Ogunbadewa

*A five-year retrospective analysis of serosurveillance data on cervid diseases* – J. Fishburn

*Development and evaluation of MG2Vec: a transformer neural network for metagenomic shotgun sequencing based BRD pathogen detection* – S. Narayanan

*A qualitative impact evaluation of the Ohio Animal Disease Diagnostic Laboratory* – K. Cramer

*NAHLN avian disease PCR assays: alternative reagents* – A. Lim

*Avian cholera outbreak in wild waterfowl and greater sandhill cranes in a wetland in New Mexico* – J. Ragsdale

*Alteration of colonic mucin glycosylation in acute swine dysentery* – S. Lin
Genetic changes in canine parvovirus (CPV-2) may result in escape from vaccine-induced immunity. Spatial and temporal distribution of CPV-2 genotypes can be used to monitor the epidemiology of canine parvoviral enteritis.

Stored nucleic acid samples from 2012 to 2022 were probed for carnivore protoparvovirus 1 (FPV and CPV-2) using a TaqMan quantitative PCR system. Positive samples were tested using specific probes to differentiate FPV from CPV-2. Finally, three primer-probe sets were employed to specifically identify CPV-2 genotypes 2a, 2b and 2c.

Of 312 samples that tested positive for CPV-2, 136 (43.6%) had a Ct value <20, 108 (34.3%) had Ct >20<30, and 72 (23.08%) had Ct >30. Of 244 genotyped samples with Ct values <30, 119 (48.8%), 76 (31.2%), and 49 (20.1%) were typed as genotype 2a, 2b, and 2c, respectively. The results of PCR genotyping showed a 100% concordance with genotyping results obtained using Sanger’s sequencing. Of 60 samples collected from 2012 – 2015, 21(35.0%) were typed as genotype 2a, 29(48.3%) genotype 2b and 10 (16.7%) genotype 2c. Similarly, 42(47.7%), 36 (40.9), and 10(11.4%) of 88 samples collected between 2016 and 2018 were typed as genotype 2a, 2b and 2c, respectively.

From 2019 – 2022, 55(57.3), 19(19.8) and 22 (22.9%) of 96 samples collected were typed as genotypes 2a, 2b and 2c, respectively. There is no significant difference in the prevalence of the different genotypes over the different time periods. Conversely, a spatial heat map of genotype distribution showed distinct spotty localization of genotype 2c in specific counties while genotypes 2a and 2b were diffusely co-localized across the state of Missouri.

These findings showed that all current genotypes of CPV-2 are found in Missouri. Genotype 2c may be a more recent entrant into some counties within the state of Missouri.
Members of the Cervidae family can harbor a number of pathogens that could potentially transmit to domestic animals and humans. Disease surveillance in cervid population is therefore important to protect the health and wellbeing of animals and humans. In the present study, we analyzed the serosurveillance testing data of free-ranging white-tailed deer (WTD) samples submitted to the Athens Veterinary Diagnostic Laboratory (AVDL) from 2017 to 2021. Sera were tested for the presence of antibodies to epizootic hemorrhagic disease virus (EHDV), bluetongue virus (BTV), bovine viral diarrhea virus (BVDV), Infectious bovine rhinotracheitis virus (IBRV) parainfluenza type 3 (PI-3) and Brucella abortus/Brucella suis. Seroprevalence of EHD and BT remained high over the last five years with an exception in 2020 where it showed a drastic decrease in prevalence. In 2017, 65.59% of samples tested were positive for EHDV antibodies and 62.04% samples were positive for BTV antibodies. In 2018, the numbers went slightly down to 55.70% for EHDV and 53.16% for BTV. The numbers remained relatively steady in 2019 with 59.38% samples showing positive results for EHDV and 57.81% samples positive for BTV antibodies. 2020 saw a drop in numbers with 20.27% positive for EHDV antibodies and 8.11% positive for BTV antibodies. In 2021, the positive numbers went back up again with 68.07% samples showing positive results for EHDV and 68.67% samples for BTV antibodies. The PI-3 antibody test results showed a range of 22.78-60.81% of tested samples giving a positive antibody response over the five-year period. The seroprevalence of BVD was low with a positivity range of 0-4.69%, and that of IBR was 1.27-7.81%. Overall, the data showed a relatively high seroprevalence of EHDV, BTV and PI-3 in the free-ranging WTD population whereas the data showed a very low seroprevalence of BVDV and IBRV in WTD over the last five-year period. None of the samples tested during the study period showed any evidence of Brucellosis in WTD. The clinical significance of this data in disease transmission and epidemiology in domestic animals need to be further investigated. Continuous monitoring of diseases in cervid populations in proximity to livestock and human habitats is critical in understanding the epidemiology and taking control measures to protect livestock and public health from transmissible infectious diseases.
DEVELOPMENT AND EVALUATION OF MG2VEC: A TRANSFORMER NEURAL NETWORK FOR METAGENOMIC SHOTGUN SEQUENCING BASED BRD PATHOGEN DETECTION

Sai Narayanan\textsuperscript{1}, Sathyanarayanan N Aakur\textsuperscript{2}, Arunkumar Bagavathi\textsuperscript{2}, Akhilesh Ramachandran\textsuperscript{1}

\textsuperscript{1}Oklahoma Animal Disease Diagnostic Laboratory, Oklahoma State University, Stillwater, OK; \textsuperscript{2}MSCS, Oklahoma State University, Stillwater, OK

Metagenome shotgun sequencing is gaining recognition as a reliable method for infectious disease diagnostics. One of its major improvements over traditional diagnostic methods is the potential for unlimited multiplexing making it possible to simultaneously test for multiple pathogens in a clinical sample. However, the complexity of metagenomic data and the computational requirements for analyzing and interpreting them have been major hurdles to the widespread adoption of metagenome-based diagnostics. We developed and evaluated a machine learning and transformer neural network algorithm for identification of pathogen sequences in the metagenome data. The entire metagenome is broken down as \textit{k-mers} and graphically represented, similar to \textit{de-bruijn} graphs for genome assembly. Based on the co-occurrence of \textit{k-mers} identified from these graphs, the neighborhood structures for each \textit{k-mer} are recognized to retrieve relevant information. We used a transformer neural network made of multi-headed attention and feed-forward mechanisms to learn features associated with the \textit{k-mers} for pathogen detection. Bovine respiratory disease clinical samples with varying pathogen availability were used to assess the efficacy of the algorithm. The average F1 scores which represent both precision and recall for our machine learning algorithm were estimated to be 0.985 and 0.981 using multilayer perceptron classifier and deep learning classifier respectively. Average F1 scores for pathogens were 0.534 and 0.631 using the Multilayer Perceptron classifier and Deep Learning classifier respectively.
A QUALITATIVE IMPACT EVALUATION OF THE OHIO ANIMAL DISEASE DIAGNOSTIC LABORATORY
Kyrsitin Brooke Cramer

The Ohio State University, Columbus, OH

The Ohio Animal Disease Diagnostic Laboratory (ADDL) services various animal agriculture sectors in the state of Ohio that have identified committed goals to increase their production systems exponentially over the next 20 years.

Will the ADDL be able to meet the demands of its clients over the next 20 years, as animal agricultural production systems expand? What impact does the ADDL’s performance have on its clients, animal agriculture, and the nation? A qualitative evaluation was conducted to identify issues that might hinder the laboratory’s ability to keep up with the predicted growth of its clientele, to assess what impact this might have on the animal agriculture industry, and its correlation to supporting public health measures in Ohio.

Since 2015, genetics and regulatory industries have significantly increased their spending on ADDL services, with genetics making up a majority of client spending. If these trends continue over the next 20 years, genetics will contribute approximately 56.8% of ADDL’s revenue generated by testing services. Private practitioners, researchers, and swine industries have decreased their client spending which may be a result of some clients choosing to outsource samples to other veterinary diagnostic laboratories (VDLs) that may be more competitive in price and turnaround time. The following laboratory sections: avian serology, bacteriology, molecular, and pathology are expected to see increases in laboratory testing. The remaining laboratory sections are expected to see a decline in testing each year. Lastly, average turnaround time ratios for each laboratory section revealed that the virology and serology sections are experiencing difficulties in minimizing turnaround times which is a result of understaffing in those sections of the laboratory.

Furthermore, according to the opinions gathered during stakeholder interviews, the Ohio ADDL has made a significant impact in the lives of its clients and the animal agricultural industries in Ohio. The clients agreed that having the ADDL in Ohio was essential for the success of their businesses despite drawbacks in performance. Stakeholders also agreed that services provided by the ADDL allowed them to better monitor animal health and prevent the spread of disease, ultimately supporting public health initiatives and maximizing profitability for those clients.
NAHLN AVIAN DISEASE PCR ASSAYS:
ALTERNATIVE REAGENTS
Ailam L Lim¹, Douglas Marthaler²

¹Wisconsin Veterinary Diagnostic Laboratory,
UW-Madison, Madison, WI; ²Indical Inc., Orlando, FL

A limited number of equipment and reagents are approved for NAHLN Influenza A viruses (IAV) and Avian paramyxovirus Type-1 (APMV-1) testing, and alternative reagents and equipment are essential to assuring the continuity of testing supplies during an outbreak situation. Aside from outbreak testing, NAHLN laboratories regularly conduct active or passive surveillance testing. The sample number for routine diagnostics and surveillance testing tends to be smaller due to the ability to pool samples. Thus, both low and medium-throughput platforms for IAV and APMV-1 testing should be encouraged, especially equipment and reagents already available in NAHLN labs for routine diagnostic testing. Low and medium-throughput platforms also require fewer plastic consumables, which is especially important as supply chain deficiencies have become a significant challenge for diagnostic laboratories during the current COVID-19 pandemic.

This project evaluated alternative equipment and reagents from Indical Bioscience to supplement the repertoire of approved supplies for IAV and APMV-1 testing. The IndiMag 48s allows for rapid nucleic acid purification of up to 48 samples per extraction using only two plastic consumable cartridges. The IndiMag 48s allows for 1, 8, or 24 sample plastic formats for increasing flexibility, additional plastics savings, and further environmentally friendly.

Thus, the IndiMag 48s is a viable medium-throughput option for the IAV and APMV-1 assays. The IndiMag Pathogen Kit is an approved reagent for Foot-and-mouth disease virus, Classical swine fever virus and African swine fever virus PCR assays and was proven as an excellent alternative extraction kit for IAV and APMV-1 assays. The IndiMag Pathogen Kit is packaged in 2 different kit formats, the standard manual fill kit and the prefilled cartridges. Both formats are available for IndiMag 48S and KingFisher family extractors. The prefilled design streamlined the extraction process and is especially valuable when rapid testing results were needed during an investigation or outbreak situation. The IndiMix JOE is a premix master mix that includes the primer/probe for Intype IC internal control for a multiplex PCR. The Intype IC RNA can be used as an extraction control when included during the extraction process, which is very important for extracting nucleic acid from sample types with high inhibitory, such as tissues or environmental samples for post-cleaning and disinfection testing in an outbreak.

Overall, this study provides data to support the IndiMag 48S, IndiMag Pathogen manual and prefilled formats, IndiMix JOE, and Intype IC RNA as an alternative for NAHLN IAV and APMV-1 testing.
In late December, 2021, two lesser snow geese and two greater sandhill cranes were submitted for postmortem examination to investigate the death of 30 birds that included a variety of duck species, lesser snow geese and greater sandhill cranes at a waterfowl management area. At postmortem examination, the birds were in good body condition. There were no significant gross lesions in the snow geese. The two greater sandhill cranes had gross lesions of multifocal necrotizing hepatitis and splenitis. The histopathology of all four birds was similar with random multifocal necrotizing heterophilic hepatitis and splenitis with intralesional bacteria. *Pasteurella multocida* was isolated from a pooled liver and spleen sample from each species. PCR testing was negative for avian influenza virus and avian paramyxovirus. The diagnosis of avian cholera (fowl cholera) was made. The staff at the waterfowl area began removing carcasses of dead birds as soon as they were found limiting the outbreak to only 100 dead birds.

*Pasteurella multocida* is a gram-negative coccobacillus bacterium that is the causative agent of avian cholera (fowl cholera). Avian cholera is known to occur in at least 180 species of birds. Among wild birds, it most frequently occurs in North American waterfowl within wetlands and nesting areas. Avian cholera is typically an acute respiratory and septicemic disease with death occurring within 24-48 hours. *P multocida* is most likely to be transmitted between birds by ingestion of the bacterium from the contaminated environment as nasal secretions of sick birds and carcasses of dead birds contain large numbers of bacteria that contaminate the environment.

Immediate removal of carcasses from the outbreak area is important for the management of avian cholera in wild birds as the bird carcasses will continually contaminate the environment with *P multocida* if left to naturally decompose or be consumed by scavengers. How *P multocida* is transmitted between outbreak areas is not known, but it is believed that some lesser snow geese and Ross’s geese can be carriers of *P multocida*. In some wetlands, an increase in the population of lesser snow geese has been associated with an increase in the incidence and mortality numbers of avian cholera. It has been shown that *P multocida* cannot be isolated from the wetland environment after 7 weeks of an outbreak. Thus, long term persistence of the bacterium in the environment is not likely the source of multiple outbreaks in the same area that occur years apart.

In acute avian cholera, gross lesions may or may not be present. Typical gross lesions include generalized congestion; hemorrhages in the heart, epicardial fat, abdominal fat, mucus membranes and gizzard; multifocal necrotizing hepatitis; and multifocal necrotizing splenitis. The microscopic lesions in the liver and spleen are coagulative necrosis and heterophilic inflammation. Heterophilic inflammation can also occur in the lungs and other organs.
ALTERATION OF COLONIC MUCIN GLYCOSYLATION IN ACUTE SWINE DYSENTERY
Susanne Je-Han Lin¹, Emma Helm², Nicholas Gabler², Eric R Burrough³

¹Veterinary Pathology, Iowa State University, Ames, IA; ²Animal science, Iowa State University, Ames, IA; ³Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames, IA

Infection with strongly β-hemolytic strains of Brachyspira hyodysenteriae (Bhyo) leads to swine dysentery (SD), a production-limiting disease characterized by mucohemorrhagic diarrhea and typhlocolitis in grower-finisher pigs. Previous in vitro studies have shown that Bhyo growth is increased in the presence of free sialic acid and N-acetylglucosamine (GlcNAc), but not in the presence of other monosaccharides, and specific sialic acid may serve as an adhesion epitope for Bhyo. It has also been shown that fucose induces a chemotactic response in Bhyo; however, a later study showed that the overall fucosylation of mucin collected from pigs with SD was decreased when analyzed by tandem mass spectrometry. Herein we describe the local expression of four different mucin glycans in colonic tissues of pigs with and without acute SD to determine if the disease is associated with the same changes in overall mucin glycosylation observed in previous studies that were conducted in vivo or by tandem mass spectrometry.

Four different lectins targeting sialic acid in an α-2,6 linkage, sialic acid in an α-2,3 linkage, GlcNAc, and α-linked L-fucose were used. Formalin-fixed spiral colon samples were obtained from a total of 36 gilts (12 controls, 12 inoculated with Bhyo, 12 inoculated with Bhyo and fed a highly fermentable fiber diet). Pigs were euthanized within 72 hours after clinical SD was observed, or at the end of the study on DPI 16 (between DPI 10 and 16). Standardized images were captured and quantification of staining specific to the above targets was performed using a commercial software program.

GlcNAc expression in pigs infected with SD was significantly lower in the lower half of the colonic glands but significantly greater in the upper half of the glands (P<0.05) compared to controls. The difference in distribution may indicate a continuous secreting activity into the colonic lumen. The increased expression of GlcNAc in the upper glands in the pigs with SD was in line with a previous study, which showed that GlcNAc significantly promoted the growth of Bhyo. Fucose expression in pigs infected with SD was significantly higher throughout the full thickness of the colon (P<0.05), which supports its chemotactic effect on the spirochetes. Pigs fed a higher fermentable fiber diet had a lower increase of fucose (P<0.05), suggesting the diet lessened fucosylation. Pigs with SD had significantly lower expression of the two lectins targeting different sialic acid linkages in the bottom half of the glands, and a lower or not different expression of sialic acids in α-2,6 linkage and in α-2,3 linkage in the upper half of the glands, respectively. These findings indicate that these two linkages of sialic acids may not be major adhesion epitopes for Bhyo or they have been utilized or degraded by local bacteria. Overall, there was a significant alteration of mucin glycosylation in acute swine dysentery.
The Membership Meeting was called to order by Dr. Dustin Oedekoven. Special thanks was given to Boehringer Ingelheim, represented by Dr. Joann Maki, for their support of the luncheon.

Report of the Committee on Nominations

Charlie Hatcher

The following slate of officers and district delegates was presented to the membership. Action on this slate will be taken at the Wednesday membership meeting.

2022-2023 OFFICER NOMINATIONS

PRESIDENT ................................................ Steven Rommereim, Alcester, SD
PRESIDENT-ELECT ................................. Stephen Crawford, Manchester, NH
FIRST VICE-PRESIDENT ...................... Peter Mundschenk, Phoenix, AZ
SECOND VICE-PRESIDENT ................. Charles Broaddus, Richmond, VA
THIRD VICE-PRESIDENT ......................... Justin Smith, Manhattan, KS
TREASURER ...................................................... Beth Thompson, Pierre, SD

DISTRICT DELEGATES

NORTHEAST ...................................................... Dave McElhaney, PA
 Robert Gibson, NH
NORTH CENTRAL ............................................ Taya Runyan, SD
 Jamee Eggers, IA
SOUTH .............................................................. Gene Lollis, FL
 Alberto Torres, AR
WEST ............................................................. H. M. Richards, III, HI
 Brian McCluskey, CO
The United States Animal Health Association (USAHA), as an organization, operates on a sound financial basis. There were some adjustments to business made due to the lasting effects of COVID 19, but much of the work of the organization has rebounded. However, there are new challenges to the usual work of the organization.

The annual audit conducted by Clifton, Larson, Allen LLP, and the review of the 2022 Statement of Financial Position by the USAHA Committee on Audit found all accounting practices and financial statements to accurately reflect the financial positions of USAHA and that all financial affairs of the Association are in order.

USAHA finished the 2021-2022 fiscal year with a decrease in net assets of $168,821 (without donor restrictions).

The Association's net worth on June 30, 2022, was $1,073,750. The current reserve is held in:

- Money market $17,519
- Equity Mutual Funds $184,996
- Treasury Exchange Traded Funds $739,958

These amounts are fair value.

Total investment returns for the year ending June 30, 2022, is a net loss of $110,187. This amount includes investment income of $10,865, net realized gains of $18,051, and net unrealized loses of $131,103. Investment fees of $8,000 are also included.

The Association strives to have a two year reserve for operations only in place. A two year reserve for the Association is $787,174 which is the cost of operations (Management and General + Publications) for the 2 years. The current investments (not including equity mutual funds) are $757,477. The reserve amount is currently not being met, the amount needed to meet the two year reserve is approximately $30,000.

Notably, there is a new accounting standard related to membership dues, to monetize member benefits more accurately. As a reminder, we have been deferring 50% of a member's dues to the following fiscal year, since dues are on the calendar year. This year, a deferral is also occurring for individual member dues for those attending in-person; the deferral is to the next fiscal year. As this is the first year of implementation, this will “self-correct” next year.

The USAHA executive committee has recommended an increase of 5% in annual dues.

As noted above, there continues to be shift in the way this organization does business, as is true for all organizations. During the past 2 years of the pandemic, USAHA offered the ability for members and non-members to participate in the annual meeting via a virtual platform. The 2022 meeting allows for virtual committee participation, but for viewing meetings only. While virtual options were a benefit during a human pandemic, the organization may not have the capacity to continue to offer as virtual meetings have a cost. Moving forward, the membership needs to be aware of this added cost to the annual meeting expenses.
Dr. Oedekoven provided a summary of activities over the past year for USAHA for the membership. Highlights included:

- Annual meeting back in person!
  - Approaching 1,200 attendees, 80% in-person.
    - Strength of the organization is in our membership, and the solutions to issues that we are challenged with.
    - Lessons learned from 2020 Virtual, 2021 hybrid
    - Moved awards ceremony to Sunday lunch, engaged a dynamic speaker for the President’s dinner. Initial feedback is good.
    - Continually looking for input for improvement (post-meeting survey – feedback is a gift!)

- 2021-25 Strategic Plan drives much of the work of the Executive Committee. The primary goals include:
  - Committee engagement
    - Year-round participation, informed by virtual meeting experience
    - Length of committees at annual meeting.
    - Committees are on a 3 year review
      - Standing subcommittees vs. Working groups.
  - Enhancing resolution effectiveness
    - Refer to USAHA.org, resolution dashboard.
    - Committee members and leadership are charged with ensuring resolutions are meeting expectations.
      - Annually
      - 3-year review process instituted at 2021 BOD, begins this year with review of 2019 resolutions.

- Broaden membership
  - Industry engagement (DAL discussing how to become more engaged)
  - Field staff – state & federal
  - Students

- EC - Dr. Tamassia resigned as 1st VP, Steve Crawford agreed to serve out the term.

Dr. Oedekoven expressed his thanks to all USAHA members for their work and contributions in making USAHA successful.

Dr. Oedekoven next recognized the following outgoing committee chairs for their service:

- Chelsea Good, Animal Welfare
- John Sanders, Food and Feed Safety

The meeting concluded with a presentation from Dr. Tony Frazier, on behalf of the National Assembly, recognizing the 20-Year Anniversary of the establishment of the National Animal Health Laboratory Network.
The second Membership Meeting was called to order by Dr. Dustin Oedekoven.

**Report of the Committee on Nominations**

Charlie Hatcher

The following slate of officers and district delegates was presented to the membership for action.

**2022-2023 OFFICER NOMINATIONS**

**PRESIDENT** ................................................ Steven Rommereim, Alcester, SD  
**PRESIDENT-ELECT** ............................. Stephen Crawford, Manchester, NH  
**FIRST VICE-PRESIDENT** .......................... Peter Mundschenk, Phoenix, AZ  
**SECOND VICE-PRESIDENT** ...................... Charles Broaddus, Richmond, VA  
**THIRD VICE-PRESIDENT** ........................ Justin Smith, Manhattan, KS  
**TREASURER** ............................................... Beth Thompson, Pierre, SD

**DISTRICT DELEGATES**

**NORTHEAST** ................................................................. Dave McElhaney, PA  
Robert Gibson, NH  
**NORTH CENTRAL** .......................................................... Taya Runyan, SD  
Jamee Eggers, IA  
**SOUTH** ........................................................................... Gene Lollis, FL  
Alberto Torres, AR  
**WEST** ............................................................................. H. M. Richards, III, HI  
Brian McCluskey, CO

A motion was made to accept the Nominations Report as presented, seconded and approved.
II. D. USAHA MEMBERSHIP MEETINGS

Passing of the Presidential Gavel

Immediate Past President Dustin Oedekoven presented incoming President Steve Rommereim (below) with his president’s gavel and pin.

Recognition of Immediate Past President

Charlie Hatcher presented Dustin Oedekoven (below) with the Past President’s plaque, recognizing his dedicated leadership and service to USAHA.
Richey welcomed everyone to the second membership meeting, and shared that attendance numbers were strong, exceeding 1,200 total attendees both in-person and virtually. There were an estimated 240 virtual participants. He encouraged all to provide feedback on the post-meeting survey.

Thanks were shared, beginning with all of our Committee leaders and their time in dedication to putting all the great presentations together and coordinating resolutions. He thanked Kim Sprout for her time in her efforts with the Resolution process. Kaylin Taylor was recognized for all of her efforts in making sure the details of the meeting all fell into place, a job that takes the better part of the year. He also thanked our host state of Minnesota, including Drs. Glaser and Garcia for their support, as well as all staff who assisted. And last but certainly not least, Kelly Janicek for her tireless commitment to making sure everything is done and on time.

Richey expressed his gratitude to Dr. Oedekoven and his leadership over the past year, and looked forward to continuing the next with Mr. Rommereim. The entire executive committee always brings the highest level of passion and professionalism to help guide Kelly and I throughout the year.
Report of the Committee on Resolutions

Charlie Hatcher

The Committee on Nominations and Resolutions presented its report with the following recommendations on 35 Resolutions submitted by committees:

Combine the following Resolutions:
4 Combined with 29
6 Combined with 28
7 Combined with 35

The following Resolutions were held for individual action, with final action indicated.

- 2, Approved as Amended.
- 4, Approved as Amended.
- 7 (Combined with 35), Approved as Amended.
- 25: Approved as Amended.

All other resolutions were approved by consent calendar by the Membership.

The detailed report of the Committee on Nominations and Resolutions is included in these proceedings, Section E.

With no other business, the meeting was adjourned.
II. E. COMMITTEE REPORTS
COMMITTEE ON ANIMAL EMERGENCY MANAGEMENT
Chair: Sara McReynolds, KS
Vice Chair: Todd Tedrow, SD

Bruce Akey, VA; Gary Anderson, KS; Marianne Ash, IN; Rich Baca, CO; Sarah Bailey, ND; Maggie Baldwin, CO; Doug Balthaser, TN; Kerry Barling, KY; Casey Barton Behravesh, GA; Lisa Becton, IA; Pierce Bennett, KS; Danelle Bickett-Weddle, IA; Carolyn Bissett, VA; Fred Bourgeois, LA; Amelia Breining, DC; Richard Breitmeyer, CA; Becky Brewer-Walker, OK; Charlie Broadus, VA; Nancy Brown, KS; Minden Buswell, WA; Louise Calderwood, VA; Amanda Chipman, IA; Sarah Coburn, AK; Maria Cooper, IN; Stephen Crawford, NH; Terrie Crnic, KS; Marie Culhane, MN; Susan Culp, TX; S. Peder Cuneo, AZ; Joanna Davis, CO; Brad De Groot, WY; Chase DeCoite, DC; Alexandra Deges, TX; Bryan Deimeke, KS; Ignacio dela Cruz, MP; Amy Delgado, CO; Thomas DelLiberto, CO; Barbara Determan, IA; Brandon Dominguez, TX; Leah Dorman, OH; Roger Dudley, NE; Tracy DuVernoy, MD; Anita Edmondson, CA; Jamee Eggers, IA; Cheryl Eia, IA; Brigid Elchos, MS; Dee Ellis, TX; François Elvinger, NY; Doug Ensley, GA; Heather Margaret Fenton, NT; Peter Fernandez, NY; Rachael Fiske, ME; Allison Flinn, MD; Katie Flynn, KY; Larry Forgey, MO; Anna Forseth, DC; Kaylie Fritts, NE; Tam Garland, TX; Cyril Gay, MD; Robert Gerlach, AK; Samantha Gibbs, FL; Sandra Gilmore, IL; Michael Gilsdorf, MD; K. Fred Gingrich II, OH; Linda Glaser, MN; Gail Golab, IL; Stephen Goldsmith, DC; Alicia Gorczyca-Southerland, OK; Kristin Haas, VT; Rod Hall, OK; Catherine Harris, NC; Charles Hatcher, TN; Andy Hawkins, KS; Burke L. Healey, CO; Carl Heckendorf, CO; Julie Helm, SC; Janemarie Hennebelle, GA; Warren Hess, IL; Siddra Hines, WA; Heather Hirst, DE; Brian Hoefs, MN; Donald Hoenig, ME; Donald Hoenig, ME; Dennis Hughes, NE; Luci Hunt, MN; Carla Huston, MS; Annette Jones, CA; J.J. Jones, KS; Jamie Jonker, VA; Jeffrey Kaisand, IA; Subhashinie Kariyawasam, FL; Diane Kitchen, FL; Patrice Klein, DC; Kashisht Kokaram, CA; Darlene Konkle, WI; Angela Lackie, TX; T.R. Lansford, TX; Dale Lauer, MN; Elizabeth Lautner, IA; Molly Jean Lee, IA; Jane Lewis, CT; Mary Jane Lis, CT; Eric Liska, MT; Pat Long, NE; Margie Lyness, GA; Kathryn MacDonald, SC; Gustavo Machado, NC; Brooke MacNeill, CO; Kevin Maher, IA; Bret Marsh, IN; Scott Marshall, RI; Michael Martin, NC; Beatriz Martinez Lopez, CA; Chuck Massengill, MO; James Maxwell, WV; Morgan McCarty, CO; Katherine McNamara, VT; Sara McReynolds, KS; David Meекer, VA; Andrea Mikolon, CA; Gay Miller, IL; Mendel Miller, SD; Peter Mundscchenk, AZ; Amanda Murray, CA; Lee Myers, WA; Michael Neault, SC; Cheryl Nelson, KY; Kayla Niel, PA; Michael Odian, MD; Dustin Oedekoven, SD; Greg Onstott, MO; Kristy Pabolonia, CO; Elizabeth Parker, TX; William Parker, GA; Boyd Parr, SC; Allison Phibbs, DC; Bill Pittenger, MO; Amanda Price, UT; Lisa Quiroz, CA; Jeanne Rankin, MT; M. Gatz Riddell, AL; Jonathan Roberts, LA; Susan Rollo, TX; James Roth, IA; Jaime Rutter, MS; Mo Salman, CO; John Sanders, WA; Amy Schaffer, KS; Patty Scharko, SC; Joni Scheffel, MN; Jean Schmidt, MO; David Schmitt, IA; Ryan Scholz, OR; Aaron Scott, CO; Adrian Self, KS; Kristy Shaw, OH; Kyle Shipman, IN; Rachel Shuey, MO; Kathryn Simmons, DC; Julie Smith, VT; Justin Smith, KS; Harry Snelson, IA; Katie Steneroden, CO; Sandra Stitlec, NJ; Steve Strubberg, MO; Darrel Styles, MD; Paul Sundberg, IA; Gregory Suskovic, MN; Tahnee Szymanski, MT; Manoel Tamassia, NJ; Todd Tedrow, SD; Jimmy Tickel, NC; Peter Timoney, KY; Alberto Torres, AR; Liz Wagstrom, AZ; Julie Wallin, CO; Michele Walsh, ME; James Watson, MS; Patrick Webb, IA; Jennifer Weber, MO; Kelli Werling, IN; Rodney White, MD; John Williams, MD; Josh Winegarner, TX; Peregrine Wolff, CA; Ryan Wolker, AZ; Mark Wood, GA; Melissa Yates, NC; Marty Zaluski, MT.

The Committee met on October 10, 2022, from 3:15-5:25 p.m. in Minneapolis, Minnesota. There were members and guests present virtually, along with 60 members and 38 guests present in-person. There were six presentations during the Annual Meeting.
Presentations and Reports

Example of an Ad Hoc Risk Assessment and Quantitative Analysis During the 2022 Minnesota HPAI Response

Marie Culhane, University of Minnesota

Proactive risk assessments are based on current research in virology, epidemiology, risk assessment, and agricultural industry practice. The Secure Egg, Secure Turkey, Secure Broiler, Secure Milk, Secure Pork, and Secure Upland Gamebird Supply plans use science- and risk-based preparedness and response components to proactively assess the risk associated with the movement of animals and products within or from a Control Area during an outbreak. Although some pro-active risk assessments (RAs) have been conducted to determine the risk of moving certain animals and their products, there will always be animal and product movements for which no pro-active RAs exist. During these situations, an ad hoc RA may be useful.

There are at least five key differences between pro-active and ad-hoc Ras:

1. Best information: A full RA uses all information to establish risk levels. An ad hoc process only uses the available information and not necessarily all information. This may lead to the uncertainty resulting in a higher risk rating for a given movement. Uncertainty and any risks that remain unknown means more precautions must be taken to allow the movement and a greater likelihood of permit refusal.

2. Mitigate risk: Included in the full RA is the development of realistic mitigation measures that can be implemented to reduce risk. In an ad hoc process, risk mitigations cannot be vetted and examined and thus are largely not included. This means there may be a higher risk of moving products or animals when risk is not mitigated as much as it could be.

3. Trust: There is less transparency around the ad hoc risk assessment process (no peer-reviewed publications or published risk assessments or presentations) and thus the results of the ad hoc RA may be less accepted by the industry, other states, regions, or countries.

4. Timely: Although an ad hoc RA can be fast, it is not instantaneous. The ad hoc RA process will delay just-in-time movements. A completed proactive RA may allow the movement to happen with less delay because the risk levels and mitigations have been previously established.

5. Makes planning possible: The results of the proactive risk assessments can be translated to permit guidances, communicated to the stakeholders, and published online. When regulators and industry know and understand the criteria for permitted movements, they can more precisely prepare and plan for the work needed in an outbreak.

During the 2022 HPAI spring outbreak in Minnesota, several risk-based decisions were made by incident command (IC) regarding the movement of poultry, poultry products, and poultry byproducts within, to, and/or from HPAI control areas. The IC sought the advice of their industry advisory board (IAB) to gather the best information possible which included but was not limited to, scientific manuscripts and epidemiological modeling. One example of an ad hoc RA that informed risk-based permitted movement decisions involved the movement of turkey litter from not known to be infected turkey premises in an HPAI control area. Although there was a peer-reviewed manuscript regarding strategies for chicken layer manure during highly pathogenic avian influenza (HPAI) outbreaks, chicken manure and
turkey litter are different. Movement and land application of fresh manure has been major risk factor for the secondary spread of avian influenza viruses in several past outbreaks. Malladi et al 2021 predicted the likelihood of moving contaminated manure was very high without sequestered storage, and, therefore, active surveillance alone may not be adequate to reduce the risk associated with manure movements. The 7-day sequestered storage of manure before movement significantly reduces the likelihood of moving contaminated manure from infected and undetected layer flocks. Although there was some uncertainty remaining after discussions between the IAB and IC, the science available supported 7-day sequestration as evaluated for layers because it might help guide turkey litter movement decisions, especially if there are birds left on the premises (e.g., other barns), and they are tested before litter movement. It was also expected that for turkey litter, as with chicken manure, there would also be some virus inactivation during litter storage/quarantine depending on the temperature, which might also help reduce the transmission risk. This is one example of the process of conducting ad hoc RAs and risk-based permitting together with industry and regulatory authorities during an HPAI outbreak.

References:

Washington State Backyard Depopulation Experiences Panel
Amber Itle, Washington State Department of Agriculture

Washington State is not known as a large commercial poultry state but has 9M layers in 222 flocks and 29M broilers in 259 flocks, none of which have become infected to date. There are over 800 organic backyard flocks, many niche farms and exhibition birds statewide. The Washington State Department of Agriculture (WSDA) continues response to confirmed reports of highly pathogenic avian influenza (HPAI) that started May 5, 2022. Here are some of the statistics we’ve tracked throughout the outbreak:

- HPAI detected in 34 backyard premises in 14 counties
- 80% of the positive premises were in Western Washington
- 12% designated as “poultry” and 88% “non-poultry”
- 300+ sick bird calls received; investigated an additional 29 that were negative
- 100% of positive cases reported high morbidity/ mortality
- Array of clinical signs but waterfowl species more likely to exhibit neurologic signs
- Flock size ranged from 2-414 birds: 85% fewer than 100 birds
- 100% of infected flocks had contact with wild waterfowl or shared a water/feed sources
- Most of the flocks contained mixed species
The trailer contains all equipment and supplies needed for depopulation, disposal, C/D, restraint and PPE for easy access and use.

The trailer was also used to transport carcasses to landfill. The lining allows for cleaning and disinfection inside and out.

**Photo 3. Custom Built CO2 Chamber**

**Euthanasia Methods**

WSDA has three fully stocked emergency management trailers strategically positioned across the State for backyard depopulation and disposal efforts.

The three major ways that WSDA handled euthanasia was 1) small container CO2 (67%); 2) small container CO2 and long range shot with Wildlife Services (29%); 3) cervical dislocation (2%).

**Photo 2. Emergency Response Trailer**

**Photo 1.** Circles show surveillance/ control areas and distribution of cases across the State. Transparent circles indicate zone closures. Open circles indicate open zones.
Small container CO2 proved to be an effective and reliable tool that was used in some capacity for almost all of our backyard responses. A CO2 cylinder with a regulator was used to deliver gas into a simple garbage can lined with disposable bags. Supplies were portable, inexpensive, easy to clean/disinfect and replace. WSDA contracted to have a portable CO2 chamber custom built to assist with larger outdoor flocks without enclosures. The model was based on a similar chamber owned and employed by Wildlife Services (WS). The aluminum box has two access points for gas and can fit a large number of birds at one time. Metal sawhorses were purchased to hold the chamber at waist level for ease of use.

Long range shot executed by USDA-APHIS-WS was a critical addition during our response. Many of the flocks had access to large, expansive properties that included challenging terrain, ponds and/or other water sources. Oftentimes, many of the birds could not be contained in pens or were free-range. A significant number of flocks were composed of mixed species including domestic and wild waterfowl and some feral birds that were difficult to distinguish. WS were able to humanely and professionally dispatch birds that could not be caught or that escaped. The key to their success was to be made aware of all species and anticipated numbers on the premises ahead of time (chickens, guinea fowl, turkeys, peacocks, emus) as well as the ability to assess the property to identify other safety risk factors (nearby homes). Dispatch activities were sometime performed in the evenings when birds perched up for the night in the trees and oftentimes required multiple visits to fully complete the task. Baiting over the course of several days was used as a tool in some cases to bring birds into enclosures. The process was made easier when the owner was not present to protect public safety and avoid the emotional impact of the process on the owner.

Cervical dislocation was only used in two cases to extinguish a single remaining bird or a bird that was missed on a depopulation day.
Challenges

One of the most challenging parts of our response was working with backyard owners that view their birds as their pets, not a food source or as a means of commercial production. Washington State Department of Agriculture has strong, robust relationships with our commercial flocks as we audit biosecurity plans, have regular meetings, keep communications open and practice response in tabletop exercises. These activities allow for strong relationships, compliance and realistic expectations for response processes. However, with backyard flocks, trusting relationships must be built in just a few days, sometimes in just a few hours. This requires the case manager to have a strong understanding of HPAI response policy/process as well as nimble, diplomatic communication skills.

Owner communication and support was critical to our response. In just a few weeks, WSDA successfully stood up a website, a HPAI Facebook group, press conferences, press releases and interviews to help reach backyard producers and answer questions. Despite these efforts, the reality of what would happen if your flock was confirmed positive with HPAI, was a difficult subject to broach with many owners. Responsible flock owners diligently reported illness and mortality to our sick bird hotline, not realizing that the entire flock, even healthy birds, would be euthanized if test results came back positive.

These birds were pets, 4H projects, the result of years of breeding, rare heritage breeds and many of them had names. No amount of indemnity was enough to compensate these owners for their losses. Many owners questioned why wild birds were allowed to stay and were in fact even protected, while their domestic flock had to be completely extinguished. The inability to keep hatching eggs and try to restore lost genetics was also heartbreaking for many. In addition to anger and frustration from owners, safety was of some concern for some of our backyard responders as depopulation efforts were often not welcome.

The uniqueness of each flock, response, conversation, and process had to be customized to each premises, which was extremely time consuming and emotionally exhausting for owners and responders alike. Some of our responders were known to deliver hand-made cards to owners to show support and empathy for what owners were experiencing. Compassion fatigue is real and many of our responders reported “burnout” throughout the response. Although the Department of Health has mental health resources, they were under-promoted and under-utilized.

Conclusion

Washington was successful in using customized euthanasia methods for backyard flocks including a combination of small container CO2, long range shot and cervical dislocation methods. However, backyard response is time consuming, resource heavy and emotionally taxing for owners and responders alike.

Moving forward, backyard flock response deserves a revision from USDA avian health policy staff. Current policy for depopulation and surveillance often discourages reporting, especially once flock owners understand the consequences of a positive test result. As long as infected wild birds are migrating though flyways across the country, the infection reservoir will be a persistent threat. The response to backyard flocks as well as the “poultry” versus “non-poultry” designation should be adjusted to think of this as a control program. Backyard flock response should be scaled back or adapted rather than trying to apply an eradication effort designed for commercial flocks to preserve trade. This would ensure the sustainability of a long-term backyard response efforts in weeks, months and maybe years to come.
New York State Backyard Depopulation Experiences Panel
Joy Bennett, New York Department of Agriculture and Markets

Summary of presentation:

- H5N1 highly pathogenic avian influenza (HPAI) was confirmed on eight premises in New York: 2 backyard (non-poultry) flocks in Ulster County and Fulton County, 3 flocks in Suffolk County [1 backyard non-poultry, 1 commercial upland game bird (poultry) premises, 1 non-commercial backyard upland gamebird (poultry) premises, 1 captive wild bird (non-poultry premises in Dutchess County, and 2 non-commercial backyard (poultry) premises in Monroe County and Orleans County.

- As of September 9, 2022, all New York premises had been released from quarantine and all premises had completed their flock plans. Upon completion of the extended fallow periods, all premises were approved to restock.

- As of October 4, New York had fulfilled all requirements to regain HPAI-free status in poultry.

Basic description of HPAI infected flocks in New York:

<table>
<thead>
<tr>
<th>Premises</th>
<th>Production Type</th>
<th>Species</th>
<th>Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suffolk 1</td>
<td>Backyard (NP)</td>
<td>chicken, guinea</td>
<td>8</td>
</tr>
<tr>
<td>Dutchess 1</td>
<td>Backyard upland game bird (P)</td>
<td>Pheasants, quail</td>
<td>195</td>
</tr>
<tr>
<td>Ulster 1</td>
<td>Backyard (NP)</td>
<td>chicken, guinea, peafowl</td>
<td>65</td>
</tr>
<tr>
<td>Suffolk 2</td>
<td>Comm upland game bird (P)</td>
<td>pheasant, duck</td>
<td>8507</td>
</tr>
<tr>
<td>Suffolk 3</td>
<td>Backyard upland game bird (P)</td>
<td>pheasant</td>
<td>285</td>
</tr>
<tr>
<td>Monroe 1</td>
<td>Backyard (P)</td>
<td>chicken, duck, pheasant, quail, goose</td>
<td>400</td>
</tr>
<tr>
<td>Orleans 1</td>
<td>Backyard (P)</td>
<td>chicken, guinea</td>
<td>31</td>
</tr>
<tr>
<td>Fulton 1</td>
<td>Backyard (NP)</td>
<td>chicken, duck</td>
<td>14</td>
</tr>
</tbody>
</table>
New York used a variety of depopulation techniques in HPAI infected backyard flocks:

<table>
<thead>
<tr>
<th>Premises</th>
<th>Euthanasia Method</th>
<th>Number euthanized</th>
<th>Producer or State/Fed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suffolk 1</td>
<td>Cervical dislocation</td>
<td>2</td>
<td>State/Fed</td>
</tr>
<tr>
<td>Dutchess 1</td>
<td>Cervical dislocation</td>
<td>166</td>
<td>Producer</td>
</tr>
<tr>
<td>Ulster 1</td>
<td>KEDS</td>
<td>59</td>
<td>State/Fed</td>
</tr>
<tr>
<td>Suffolk 2</td>
<td>CO2 Cart/Container</td>
<td>8507</td>
<td>State/Fed</td>
</tr>
<tr>
<td>Suffolk 3</td>
<td>CO2 Cart/Container</td>
<td>285</td>
<td>State/Fed</td>
</tr>
<tr>
<td>Monroe 1</td>
<td>CO2 Cart/Container</td>
<td>265</td>
<td>State/Fed</td>
</tr>
<tr>
<td>Orleans 1</td>
<td>Cervical dislocation</td>
<td>2</td>
<td>State/Fed</td>
</tr>
<tr>
<td>Fulton 1</td>
<td>KEDS</td>
<td>3</td>
<td>State/Fed</td>
</tr>
</tbody>
</table>

New York used a variety of disposal strategies for HPAI infected backyard flocks:

<table>
<thead>
<tr>
<th>Premises</th>
<th>Disposal Method</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suffolk 1</td>
<td>Incineration</td>
<td>NYS DEC facility</td>
</tr>
<tr>
<td>Dutchess 1</td>
<td>Burial</td>
<td>On-site</td>
</tr>
<tr>
<td>Ulster 1</td>
<td>Incineration</td>
<td>NYS DEC facility</td>
</tr>
<tr>
<td>Suffolk 2</td>
<td>Compost</td>
<td>Outdoor, on-site</td>
</tr>
<tr>
<td>Suffolk 3</td>
<td>Compost</td>
<td>Outdoor, at Suffolk 2 prem.</td>
</tr>
<tr>
<td>Monroe 1</td>
<td>Compost</td>
<td>Off-site, comm. Facility</td>
</tr>
<tr>
<td>Orleans 1</td>
<td>Incineration</td>
<td>Pet crematorium</td>
</tr>
<tr>
<td>Fulton 1</td>
<td>Incineration</td>
<td>NYS DEC facility</td>
</tr>
</tbody>
</table>

- Virus elimination was achieved on all eight infected premises through extended fallow period (150 days).
- Surveillance within the 10 km surveillance zone included phone contact with known poultry premises. If the owner indicated no sick or dead birds present, information on avian influenza and how to report sick birds was provided. Premises with reported sick or dead birds was prioritized for surveillance sampling and tested as soon as possible.
- If backyard flocks or contact premises were identified in the 10 km surveillance zone of an infected backyard non-poultry flock, they received 2 phone calls at least 14 days apart.
- If backyard flocks or contact premises were identified in the control area (10 km) and surveillance zone (10 – 20 km) area of an infected poultry premises (backyard or commercial), they received 2 phone calls at least 14 days apart.
- If commercial premises were identified within the control area, they were required to be tested every 5-7 days.
- Sick bird call investigations and foreign animal disease investigations, February 15–September 14, 2022:

<table>
<thead>
<tr>
<th># Sick Bird calls</th>
<th># FADIs</th>
<th>Trace/Epi Link</th>
<th>HPAI positive</th>
<th>Total prems tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>99</td>
<td>29</td>
<td>3</td>
<td>8</td>
<td>131</td>
</tr>
</tbody>
</table>
Minnesota Backyard Depopulation Experiences Panel  
*Myah Walker*, Minnesota Board of Animal Health  
Presentation Summary:  
- Review of Minnesota backyard (BY) flock cases to date  
- Highlight our process from sick bird call to disposal  
- Point of view (POV): case managers and compost Subject Matter Expert (SME) things to note  
- Review of additional resources

Montana's National Pork Board Depopulation and Disposal Exercise Experience  
*Tahnee Szymanski*, Montana Department of Livestock  
Montana was selected to participate in a depopulation and disposal exercise by the National Pork Board. It was held in August of 2022. The exercise included a foreign animal disease diagnostic (FADD) investigation, setting up an incident management team (IMT), water-based foam depopulation, shallow burial with carbon, and compost.

Update on Farm Bill Section 12101 - Animal Disease Prevention and Management Programs  
*Julie Wallin*, USDA, Animal and Plant Health Inspection Service (APHIS)  
Presentation Summary:  
- Farm Bill Section 12101 Animal Health Programs – total spending FY 2019-FY 2022  
- FY 2023 Plans breakdown

Committee Business:  
The Committee reviewed three previous resolutions. The first was the 2019 USAHA Resolution 4, 9, 15, and 16 Combined Approved as Amended; Subject Matter: *African Swine Fever (ASF)/Classical Swine Fever Surveillance Program and Tissues for Official ASF Testing in National Animal Health Laboratory Network*. It was decided to review this resolution during the January 2023 monthly call. The second resolution was the 2019 USAHA Resolution 6 Approved; Subject Matter: *American Veterinary Medical Association (AVMA) Veterinary Responder Certification*. The Committee voted to consider this resolution closed and completed as the AVMA has developed the certification program. The third resolution was 2020 USAHA Resolution 1, 10, and 18 Combined Approved; Subject Matter: *National Veterinary Stockpile (NVS) Resources for Mass Depopulation of Animals*. The Committee had previously requested an update on the NVS during USAHA in 2023, and Mr. Rodney White provided that update on the September 29, 2022 call. The Committee voted to continue to monitor this resolution as a response with progress.  
There was one new resolution brought forward to the Committee with the subject matter of *Strengthening the U.S. Animal Disease and Traceability and Disease Prevention RFID Infrastructure*. The Committee made multiple amendments to this resolution before passing it unanimously out of the Committee.

The Committee adjourned at 5:25 p.m.
USAHA/AAVLD COMMITTEE ON ANIMAL HEALTH
SURVEILLANCE AND INFORMATION SYSTEMS
Chair: Giovani Trevisan, IA
Vice Chair: Maria Cooper, IN

Bruce Akey, VA; Carissa Allen, MN; Marianne Ash, IN; Rich Baca, CO; Sarah Bailey, ND; Tom Baker, ON; Maggie Baldwin, CO; Casey Barton Behravesh, GA; Lisa Becton, IA; Wendy Black, OR; Paola Boggiaio, IA; Fred Bourgeois, LA; Susan Bright-Ponte, MD; Charlie Broaddus, VA; Nancy Brown, KS; Louise Calderwood, VA; Craig Carter, KY; Maria Cooper, IN; Marie Culhane, MN; Susan Culp, TX; Brad De Groot, WY; Chase DeCoite, DC; Bryan Deimeke, KS; Amy Delgado, CO; Barbara Determan, IA; Anita Edmondson, CA; Dee Ellis, TX; François Elvinger, NY; Heather Margaret Fenton, NT; Peter Fernandez, NY; Katie Flynn, KY; Anna Forseth, DC; Tam Garland, TX; Gail Golab, IL; Stephen Goldsmith, DC; Alicia Gorczyca-Southerland, OK; Kristin Haas, VT; Patrick Halbur, IA; Rod Hall, OK; Catherine Harris, NC; Charles Hatcher, TN; Karyn Havas, MN; Tracia Hebdon, ID; Carl Heckendorf, CO; Janemarie Hennebelle, GA; Ashley Hill, CA; Annette Jones, CA; Jeffrey Kaisand, IA; Diane Kitchen, FL; Berend Koops, KS; Elizabeth Lautner, IA; Scott Leibsle, ID; Donald Lein, NY; Jim Logan, WY; Gustavo Machado, NC; Rodger Main, IA; Edie Marshall, CA; Michael Martin, SC; Beatriz Martinez Lopez, CA; Brian McCluskey, CO; Patrick McDonough, NY; Sara McReynolds, KS; Miranda Medrano, MN; Gay Miller, IL; Amanda Murray, CA; Michael Neault, SC; Greg Onstott, MO; Elizabeth Parker, TX; Boyd Parr, SC; Allison Phibbs, DC; Bill Pittenger, MO; Herbert Portillo, VA; Amanda Price, UT; Dave Pyburn, IA; Valerie Ragan, VA; Susan Reenders, SD; Cassidy Rist, VA; Mo Salmon, CO; Rachel Schambow, MN; Ryan Scholz, OR; Stacey Schwabenlander, MN; Kyle Shipman, IN; Jonathan Sleeman, WI; Justin Smith, KS; Manoel Tamassia, NJ; Alberto Torres, AR; Jerry Torrison, MN; Christina Trabanco, FL; Giovani Trevisan, IA; Alex Turner, CO; Binu Velayudhan, GA; Jill Wagner, IA; Elizabeth Warren, DE; Patrick Webb, IA; Jennifer Weber, MO; Nora Wineland, MI; Ryan Wolker, AZ; Katie Woodard, IA; Marty Zaluski, MT.

The Committee met during a virtual pre-meeting as well as formally in-person at the 2022 Annual Meeting in Minneapolis, Minnesota. The two-hour virtual session was held on Friday, September 30 with a total of 37 attendees logged in at peak time. Committee members met in person in Minneapolis on Monday, October 10, commencing at 10:15 a.m. An initial headcount determined 115 individuals were present in the meeting room and standing at the access door. The meeting was adjourned at 12:28 p.m. Upon a second and final headcount, 115 individuals were present with 85 attendees having signed the attendance sheet. No discussion was warranted on previous resolutions. One proposed resolution was sent electronically to committee members ahead of time for consideration and discussion at the in-person gathering.

Presentations and Reports
National List of Reportable Animal Diseases Updates

Oriana Beemer, USDA, Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS)

The National List of Reportable Animal Diseases (NLRAD) presentation provided an update that APHIS is continuing to work towards implementation of a standardized national system for reportable diseases. The proposed rule was open for comments from April 2 to August 21, 2020, with several comments raised which required further consideration within the agency and a review for legal soundness. Dr. Beemer provided an overview of the proposed modifications to the rule based on those considerations and next steps for the agency to proceed.

Information Technology Standards Subcommittee Update: Electronic Certificates of Veterinary Inspection (eCVI) and Emergency Permit Data Standards Working Groups

Ryan Scholz, Oregon Department of Agriculture

Dr. Scholz provided updates on the eCVI Data Standards working group and Emergency Permit Data Standards working group, respectively, each of which falls under the Information Technology Standards Subcommittee. Dr. Scholz discussed the current eCVI data standards updates which are in version 2.4 and planned to be released in January 2023. The new version includes anticipated changes related to a requirement for the issuing veterinarian to consist of a first and last name (i.e., listing only a company business name is not acceptable). The new version will now allow international addresses for a consignor/consignee (but not the origin/destination). Additionally, the mixed sex option will only be allowed for a group-lot such that any individual animals can only be male or female. Finally, the National Uniform Eartagging System (NUES) tag standard is updated to allow any state postal code as a prefix. Dr. Scholz then presented the current status of the Permit Data Standards working group. Several meetings have been held, and a scope of work has been agreed upon. An initial data standards draft is near completion and expected to be finished in October 2022. The working group’s next steps include evaluating the draft standard for completeness and comparing it against “real” permits. Version 1.0 is expected to be published at the end of 2023.

AgView Updates

Patrick Webb, National Pork Board

Dr. Webb provided an overview of the current metrics and new and upcoming features for AgView, the pork industry’s database and dashboard technology for contact tracing of pigs in foreign animal disease investigations and outbreaks. State Animal Health Official (SAHO) accounts exist in 29 states, and 31 Account Management Partner (AMP) accounts have been created that are used by swine management companies and veterinary clinics to manage their clients’ AgView accounts through a dashboard. Currently 761 producer accounts are in use which include pork producers and pork packers. There are 6,665 premises and 414,630 movements that have been entered into AgView since it launched in November of 2020. On average there are 12,000 movements entered into AgView per week with that number trending upward over time.

Dr. Webb attributes the success of AgView adoption to application program interfaces that allow integration with third party software systems. These integrations make import and export of data relatively easy for users. Specific to state and federal animal health officials, AgView can integrate with CoreOne to share AgView locations and movements. AgView can also export movements to USDA’s enterprise messaging service so they can flow into USDA’s Emergency Management Response System (EMRS). Account Management Partners are also a driver of AgView adoption, and one major pork packer...
has strongly encouraged their suppliers to obtain AgView accounts. There is no cost to acquiring an AgView account (producer, SAHO, or AMP) which also has helped with adoption. New features include the ability for producer users to pre-permission the sharing of their premises locations with state animal health officials (SAHOs), and by early 2023, this will also include movements. Producer users can export their locations and movements from their AgView accounts which has helped with verification of 30 days of movement data needed for enrollment in the U.S. Swine Health Improvement Plan (US SHIP) pilot project. There is also a new data aggregation and visualization feature that allows for AMP users to create a global view of all their client locations and movements which helps provide situational awareness for how endemic diseases might be moving through their client base.

AgView was recently utilized in a traceability project which helped identify features that could better align AgView and the US SHIP pilot. One of these features that is under development is a read-only AMP account for Official State Agencies to make it easy to verify compliance with US SHIP program standards. Another feature will focus on adapting AgView to serve as a database of record for traceability purposes. The 2023 AgView development road map includes features intended to enhance the user experience in AgView and provide even more day-to-day value to users which is important for keeping data current.

Information Sharing and Decision Making During a Disease Outbreak

Bret Marsh, Indiana Board of Animal Health

Dr. Marsh provided contextual facts, evidence, historical perspectives, and current strategies for data sharing and response to disease outbreaks. He discussed the evolution and changes that have taken place during the last few decades allowing a more robust and efficient response to animal health crisis events. Dr. Marsh strongly suggested that collaborative work between industry, state, and federal animal health stakeholders is the most effective approach to dealing with and furthering preparedness for foreign animal and endemic disease outbreaks. Dr. Marsh recognized the National Poultry Improvement Plan (NPIP) as a successful poultry industry animal health initiative and stated his excitement with the recent establishment and evolution of the US SHIP being modeled after the NPIP program.

Domestic ASF/CSF Surveillance and Enhancements

Oriana Beemer, USDA, Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS)

The USDA-APHIS Swine Hemorrhagic Fevers Surveillance plan was first published and implemented in 2019, building upon a long history of active surveillance for Classical Swine Fever (CSF). APHIS published the first update to the plan in July 2022, incorporating several enhancements. Some of the enhancements include the incorporation of additional approved laboratories, enhancements specific to Puerto Rico and the U.S. Virgin Islands as part of the established Protection Zone, incorporation of additional approved sample types, updated case definitions, and inclusion of feral swine surveillance updates. Overall, these enhancements reflect the ongoing activities to strengthen detection capabilities, enhance outbreak preparedness, and support claims of disease freedom in U.S. swine.
Intentional Animal Health Threats and Surveillance to Recognize and Report Suspicious Disease Incidents

Stephen W. Goldsmith, Federal Bureau of Investigation (FBI)

The presentation covered the FBI Weapons of Mass Destruction program to prevent, recognize, report, investigate, perform attribution, and disrupt intentional biological incidents in animal populations and the concepts of considering biosurveillance and biosecurity from a law enforcement perspective. Disease surveillance is the critical first step to differentiate natural, accidental, and deliberate introductions of emerging and high-consequence transboundary diseases. Dr. Goldsmith discussed characteristics of suspicious, atypical, or unexplained disease incidents or triggers and the value of interagency tripwire programs between key agencies to report, analyze, and investigate suspicious incidents.

Committee Business:

Dr. Carissa Allen, Minnesota Board of Animal Health, electronically submitted a proposed resolution to our committee members prior to the in-person meeting in Minneapolis. The resolution requests the USDA to provide access to data from the National Veterinary Accreditation Program (NVAP) in real-time to state animal health officials and their electronic database systems that would support system-to-system integration. Dr. Giovani Trevisan, committee co-chair, reviewed the resolution aloud with attendees. A motion was made by Dr. Mo Salman and seconded by Dr. Michael Neault to accept the resolution. Dr. Michael Martin suggested a minor grammatical amendment to the resolution. A motion was made by Dr. Maggie Baldwin and seconded by Dr. Ryan Scholtz to accept the amendment. A vote was taken on the amendment and passed by a majority. A final vote was taken on the resolution and passed unanimously.

There was no further business, and the meeting was adjourned at 12:28 p.m.
The Committee met from 3:15-5:15 p.m. on October 11, 2022, in Minneapolis, Minnesota. There were members and guests present virtually, along with 72 members and guests present in-person.

AVMA Human Ending Documents

Dr. Kollias presented on three different AVMA Humane Ending Documents - 1) Euthanasia, 2) Slaughter, and 3) Depopulation. The documents are all available on the AVMA website. The euthanasia guidelines were updated in 2020. AVMA is working on a full revision of the slaughter document to break it down by species. It was last updated in 2016. In the ongoing update process additional information on fish and eels will be added.
The depopulation document is already broken down by species. Review for depopulation guidelines will begin in 2023. It tends to take a year to a few years to update a document. There are working groups working on these updates by species including industry veterinarians.

The speaker has a preference for the term depopulation instead of mass depopulation because depopulation inherently indicates there is a group of animals being depopulated.

**California Proposition 12 and Massachusetts Question 3**

Tiffany Lee, Clemens Food Group

Dr. Lee spoke about California Proposition 12 and Massachusetts Question 3. These ballot initiatives were voted into effect by voters to limit the ways in which eggs, veal, and pork can be raised. Prop 12 passed on November 6, 2018, with a 63% approval rate. Q3 passed November 8, 2016, with a 77% approval rate. Both laws limit the sale of product from animals kept in close confinement.

California law prohibits farmers within the state to knowingly cause any covered animal to be confined in a cruel manner. It also prohibits businesses from knowingly engaging in the sale of meat or egg products of these animals or their offspring.

The requirements are as follows:

**Egg-laying hens**

- Hens free to roam unrestricted, must be provided enrichments - effective December 19, 2018
- Must be provided 144 sq. in. of usable floor space per hen - effective January 1, 2020
- Veal calves
- Stand up, turn around freely, fully extend limbs - effective December 19, 2018
- Must be provided 43 sq. ft. of usable floor space at all times - effective January 1, 2020
- Breeding pigs
- Stand up, turn around freely, fully extend limbs - effective December 19, 2018
- Must be provided 24 sq. ft. of usable floor space at all times - effective January 1, 2022

There are a variety of exceptions for things such as medical research and youth livestock shows.

Similar to California, Massachusetts law applies to livestock producers raising animals and businesses selling meat and egg products. The provision approved by Massachusetts voters in 2016 was due to go into effect December 1, 2021. The Massachusetts state legislature adjusted the effective date as the state and industry were unprepared for implementation. The legislature also moved regulatory authority from the Office of Attorney General to the Massachusetts Department of Agriculture. Final regulations were issued in June and went into effect in August.

Both provisions have seen significant litigation. The U.S. Supreme Court heard arguments on California Proposition 12 today and will issue a ruling in Spring 2023. The opinion in this case will also affect the future of MA Q3.
Ventilation Shutdown and VSD+
*Maggie Baldwin*, Colorado Department of Agriculture

Dr. Baldwin shared her experience responding to Highly Pathogenic Avian Influenza (HPAI) outbreak in Colorado over the past year. She recommended state agencies make plans to respond to this type of outbreak and even though her agency had meetings prior to their outbreak of HPAI in Colorado, plan went out the window when the reality of their outbreak set in. Here are some her highlights of lessons learned:

- Plan in Colorado prior to outbreak of HPAI was to use depopulation method, if needed, of full house gas CO2. First producer location where HPAI was diagnosed had 1.3 million birds which would require 27 tankers of CO2 – three tankers of CO2 per house.
- Quickly Colorado realized this method was impossible due to the national shortage of CO2 – it just wasn’t available to perform full house gas method as planned.
- Death from HPAI is horrible for the birds (and people caring for the birds) with a mortality of 90% from the disease
- State’s request to use Ventilation Shutdown Plus (VSD+) was granted.
- 85% mortality with VSD+, but came with its own challenges:
  - Hard on people performing the method,
  - Disposal of large number of carcasses,
  - Limited guidelines on VSD+ procedures – method, implementation, what to monitor, how to measure success, applied method for different types of housing systems,
  - VSD+ does not work in barns where there is already a high mortality – not enough live birds to generate the heat.

Depopulation Strategies in National Emergencies
*Jan Shearer*, Iowa State University

Dr. Shearer reviewed depopulation methods for swine and cattle. Remember that approved killing methods for euthanasia and slaughter are permitted for depopulation in addition to other methods which are only permitted for depopulation.

**Swine**
- Gunshot, penetrating and nonpenetrating captive bolt (depending on age of the animal), CO2 inhalant, electrocution, Ventilation Shutdown Plus (VSD+).
- Note: VSD alone is NOT an acceptable method of depopulation.
- VSD+ (plus heat, CO2, humidity) will lead to 95% mortality in one hour.
- AVMA recommends for an approved depopulation method causes 95% death within an hour.
- Reviewed Dr. Angela Baysinger’s Journal of the American Veterinary Medical Association (JAVMA) publication from 2021 studying different methods of depopulation in swine. Depopulation of swine needed at the beginning of Covid pandemic due to packing houses/supply chains being shut down.
- VSD+TH System:
Plus, temperature and humidity
- Causes 99% mortality within an hour, mean time to silence is an hour, temp inside the barn reaches 130F then the clock starts for time to silence.
- This is the recommended method for swine depopulation.

Cattle
- Emergency management options can also include vaccination – for example Foot and Mouth Disease (FMD), the response would include vaccination and depopulation. Vaccinate to kill, vaccinate to slaughter, and vaccinate to live.
- Carcass disposal is a challenge.
- Accessing the cattle to perform depopulation a challenge.
- Portable pneumatic captive bolt study
  - Similar to the tool/method used in slaughter for stunning, but this captive bolt is “portable” and has a longer bolt which severs the brainstem of adult cattle.
  - One-step kill method – no secondary kill step required even though this is a captive bolt.
  - 100% mortality in this study – unconsciousness and death because of the longer bolt which completely severs the brainstem.
  - This method is an option if needed for cattle depopulation.

Committee Business:
There was a motion and a second to consider a resolution which would direct USDA to consistently accept AVMA-approved depopulation methods. There was considerable debate and multiple amendments seeking to tailor this resolution to the appropriate USDA role. USDA does not tend to depopulate animals. This tends to be the role of producers and their designees. However, USDA does determine when it will pay indemnity for depopulated animals. In addition, some in the room brought up situations where USDA officials recommended against an American Veterinary Medical Association (AVMA)-approved method. The resolution passed.
USAHA/AAVLD COMMITTEE ON AQUACULTURE
Chair: Paul Zajicek, FL
Vice Chair: Reddy Bommineni, FL

Peter Belinsky, RI; Carolynn Bissett, VA; Y Reddy Bommineni, FL; Beverly Byrum, OH; Ignacio dela Cruz, MP; Tracey Dutcher, MN; Robert Gerlach, AK; Colin Gillin, OR; Gail Golab, IL; Larry Granger, CO; Keith Haffer, SD; Rod Hall, OK; Kathleen Hartman, FL; Nathan Harvey, NH; Jennifer Haugland, NC; Warren Hess, IL; Donald Hoenig, ME; Donald Hoenig, ME; Jeffrey Kaisand, IA; William Keleher, ME; Donna Kelly, PA; Lester Khoo, MS; Diane Kitchen, FL; Patrice Klein, DC; Darlene Konkle, WI; Berend Koops, KS; Kevin Lahmers, VA; Christina Loiacono, IA; Scott Marshall, RI; Beatrix Martinez Lopez, CA; Michael Neault, SC; Michael Neault, SC; Danielle Nelson, WA; Jenee Odani, HI; Michael O'dian, MD; Richard Oliver, NC; Lanny Pace, MS; Amar Patil, NJ; Bill Pittenger, MO; Amanda Price, UT; Suelee Robbe-Austerman, IA; James Roth, IA; Sherrill Russell, MO; John Sanders, WA; Shanna Siegel, MD; Kevin Snekvik, ; Heindrich Snyman, ON; Jennifer Strasser Mester, IN; Darrel Styles, MD; Manoel Tamassia, NJ; Dean Taylor, UT; Rachel Tell, IA; Michele Walsh, ME; Jennifer Weber, MO; Marcus Webster, GA; John Williams, MD; Nora Wineland, MI; Ryan Wolker, AZ; Paul Zajicek, FL.

The Committee met on October 10, 2022, from 3:35-5:45 p.m. in Minneapolis, Minnesota. There was one member present virtually, 14 members, 28 signed-in guests and ten walk-in guests present in-person.

The Chair noted prior Committee Chairs had recognized attendees were drawn to these meetings in hopes of learning about U.S. aquaculture production systems, practices, needs and challenges. For the last several meetings, the agenda was split between invited presentations focused on the unique nature of U.S. aquaculture and the business of the Committee. This meeting would follow that precedent.

Presentations and Reports

Committee and guests enjoyed three presentations that spoke to the importance of aquaculture as a critical agriculture sector because of its role in domestic food security, its socioeconomic benefits and its incredible diversity of animals and plants in production systems and the diversity of business models and innovations being developed to capitalize on that diversity.

Aquaculture Medicine: Opportunities and Challenges
Jessica Fox, Certified Aquatic Veterinarian (CertAqV)

Dr. Fox spoke to the diversity of production systems and aquatic animals in the United States and the need for increased farmed seafood production to address a $17 billion seafood deficit. Fox also described the unique challenges of managing animals that are “hidden” underwater that includes but is not limited to a lack of labeled therapeutants, importance of vaccines, and the availability of specific pathogen free juveniles provided to farms for grow-out.

trū Shrimp: Changing the Husbandry Rules of Shrimp Aquaculture
Michael Ziebell, trū Shrimp Companies

Mr. Ziebell described the commercialization of a patented indoor, intensive shrimp production system developed by Texas A&M. The company has refined husbandry practices, species nutritional needs and feed formulations and developed markets beyond farmed seafood to pet food and chitosan derived from shrimp shell molts. Their R&D facility is located in Minnesota and a new production facility will break ground in South Dakota in spring 2023.
The Business and Industries that can Grow Around Our Aquaculture Efforts

Glenn Ford, In City Farms

Mr. Ford discussed how aquaculture can serve as a solution to unemployment and food deserts in inner cities and rural communities. In City Farms has multiple aquaponic farms strategically located in the U.S. to provide underserved communities with fresh, locally, and sustainably grown produce. Ford echoed the benefits and importance of aquaculture by emphasizing the global reliance on the products sourced from aquaculture operations. He also presented an overview of their efforts to find additional partners and locations for their aquaponic systems.

Committee Business:

Prior to the 126th annual meeting, the Committee was provided the three 2019 resolutions entitled Aquatic Animal Diagnostic Working Group, Commercial Aquaculture Health Program Standards and Import Health Requirements for Live Aquatic Animals and the two resolutions approved in 2021, National Aquaculture Health Plan and Standards and Import Health Requirements for Live Aquatic Animals.

During the meeting, the Chair explained that prior Chairs assumed resolutions were an annual exercise. They did not recognize previous resolutions were carried forward by the U.S. Animal Health Association as issues of importance to animal agriculture. As a consequence, prior Chairs had revised and updated topics for resolutions as progress was achieved not realizing prior resolutions were “still on the books.” In reviewing the 2019, 2020, and 2021 resolutions, the current Chair noted their content and intent represented a progression in achievement and evolving need over time.

2019 Resolutions Review

The Chair walked through the three 2019 resolutions for review and action by the Committee to: 1) recognize that the intent or request contained in the resolution has been satisfied or 2) unique to this Committee, subsequent resolutions have revised or updated the resolution in question, and therefore, can be withdrawn.

2019 Aquatic Animal Diagnostic Working Group Resolution

The Chair called for a motion to recognize this resolution for the Working Group (WG) as having been completed as the WG had been created and is functioning effectively as intended by the resolution. The motion was seconded. During subsequent discussion, representatives of the USDA, Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) Aquatic Animal Health Program described the activities of the WG. The Chair closed discussion, called the question and the motion carried to withdraw this motion.

2019 Commercial Aquaculture Health Program Standards Resolution

The Chair called for a motion to withdraw this resolution in favor of subsequent resolutions of the same title in 2020, 2021 and a proposed resolution to be discussed later have revised and updated the request embedded in the 2019 resolution. The motion was seconded. During subsequent discussion, representatives of the USDA-APHIS-VS Aquatic Animal Health Program described the Commercial (now Comprehensive) Aquaculture Health Program Standards: history, goals, objectives, and principal components. The Chair closed discussion, called the question and the motion carried.

2019 Import Health Requirements for Live Aquatic Animals Resolution

The Chair called for a motion to withdraw this resolution for subsequent resolutions of the same title in 2020 and 2021 and a proposed resolution to be discussed later have revised and updated the request embedded in the 2019, 2020 and 2021 resolutions. The
motion was seconded. During subsequent discussion, members discussed progress to complete foreign animal disease risk assessments and subsequent action or lack of action by USDA-APHIS. Members noted they opposed the reactive nature of the agency of waiting for outbreaks to occur rather than taking a more proactive position of implementing import controls for pathogens not known to occur in the U.S. The Chair closed discussion, called the question and the motion carried.

The Chair noted time did not allow for similar consideration and action concerning the three 2020 resolutions entitled, Comprehensive Aquaculture Health Program Standards, Update of a National Plan for Aquaculture and Aquatic Animal Health and National List of Reportable Animal Diseases. The Chair requested members to be prepared for a similar review exercise during the 2023 annual meeting.

2021 Resolutions Update

The Chair noted that in the interest of developing updated and revised resolutions, the two 2021 resolutions would be presented with proposed updated language as well as a new resolution.

Proposed 2022 Import Health Requirements for Live Aquatic Animals

The Chair called for a motion to adopt a significantly revised resolution calling for USDA-APHIS-VS to initiate work to zone the United States as free from World Organisation for Animal Health (WOAH) listed pathogens that have never been detected in the U.S., such as salmon alphavirus, epizootic hematopoietic necrosis virus, yellowhead virus-1, and Perkinsus olseni. The motion was seconded. Subsequent discussion revealed member support for formalizing the designation of pathogen status in the United States to inform trading partners and to protect the farming community. The Chair closed discussion, called the question and the motion carried.

Proposed 2022 Comprehensive Aquaculture Health Program Standards

The Chair called for a motion to adopt a significantly revised resolution calling for USDA-APHIS-VS to initiate rule-making process to codify the Comprehensive Aquaculture Health Program Standards (CAHPS) as a voluntary aquatic animal livestock health management program. The motion was seconded. Subsequent discussion noted that CAHPS has evolved over the last seven years to a point where the farming community is supporting codification. Aquatic animal health regulation is fractured between federal agencies (Agriculture and Interior) and between state agencies (Agriculture and Fish and Game/Natural Resources). Codification would create: 1) significant recognition at the federal and state levels that USDA is the lead and competent agency for farm-raised aquatic animals, and 2) similar assurance for trading partners. Members noted farmers are hesitant to embrace regulations and this decision making by stakeholders is a historic step that should be supported. The Chair closed discussion, called the question and the motion carried.

Proposed 2022 Create an International Export Hub

The Chair called for a motion for USDA-APHIS-VS to create an interactive “hub” providing supplementary information and guidance to the international regulations (IRegs) for animal exports beneficial to farms and exporters shipping aquatic animals. This hub would communicate and explain: export requirements, documentation, certificates and USDA oversight activities. The motion was seconded. Subsequent discussion focused on importing country regulations that are imposed at a sub-political level (i.e., province or state). Unfortunately, additional discussion was curtailed for lack of time. The Chair suggested the motion be tabled with an understanding that the resolution may be presented at the next annual meeting. The motion was tabled.

The Chair adjourned the meeting at 5:45 p.m.
COMMITTEE ON BIOLOGICS and BIOTECHNOLOGY
Chair: Keith Haffer, SD (remote)
Vice Chair: Alan Young, SD

Gary Anderson, KS; Chris Ashworth, AR; Andrew Bailey, DC; Randall Berrier, CO; Amelia Breinig, DC; Duane Chappell, KY; Walter Cook, TX; Maria Cooper, IN; Chase DeCoite, DC; Alexandra Dejes, TX; Bryan Deimeke, KS; Barbara Determan, IA; Kim Dodd, MI; Brandon Dominguez, TX; James England, ID; James Evermann, WA; William Fales, IA; Allison Flinn, MD; Katie Flynn, KY; Patricia Foley, IA; K. Fred Gingrich II, OH; Gail Golab, IL; Stephen Goldsmith, DC; Alicia Gorczyca-Southerland, OK; Rod Hall, OK; Keith Haffer, SD; Joseph Huff, CO; Jeffrey Kaisand, IA; Darlene Konkle, WI; Elizabeth Lautner, IA; John Lawrence, ME; Joanne Maki, GA; David Marshall, NC; Will McCauley, DC; Scott McVey, NE; Andrea Mikolon, CA; William Parker, GA; Boyd Parr, SC; Allison Phibbs, DC; Dave Pyburn, IA; Kathryn Simmons, DC; Shri Singh, KY; Susan Stehman, PA; Darrel Styles, MD; Alberto Torres, AR; Stephen White, WI; Josh Winegarner, TX; Thach Winslow, TN; Ryan Wolker, AZ; Mark Wood, GA, Alan Young, SD.

The Committee met during the 2022 Annual Meeting in Minneapolis, Minneapolis on October 11. There were members and guests present virtually, along with six members and ten guests present in-person. As this did not meet the requirements for a quorum, no formal business actions were undertaken although the committee did have three invited speakers and discussed four business items which will require follow-up using email communication.

Presentations and Reports

Byron Rippke, USDA-Center for Veterinary Biologics (CVB) submitted the 2022 CVB Update.

MJ McNamee, Animal Health Institute (AHI) presented on The International Cooperation on Harmonization of Technical Requirement for Registration of Veterinary Products (VICH) and the 3Rs.


Committee Business:

The business meeting was started at the conclusion of the final speaker, at which time it was determined that there was no quorum. A total of six members, representing approximately 12% of the total membership, were present. The decision was made to continue discussion for later follow-up.

A discussion based on the presentation of Dr. Zeman, and in particular the regulatory framework behind adjuvant withdrawal times was undertaken. Alan Young, Vice-Chair, had brought forward a concern by his firm regarding what appeared to be an overextension of the regulatory basis for establishing withdrawal times of new adjuvants. Upon the recommendation of several members of the USAHA Executive Committee, the intention was to craft a letter that could be forwarded from USAHA, and in particular, the Committee on Biologics and Biotechnology, to clarify the basis of these guidelines with the intention of arriving at a set of guidelines that promote both consumer/producer protection and safety, without placing undue limitations on the development of new adjuvants for use in animal health. Of particular concern was the apparent reliance on the complete absence of any immune activity in the vaccination site as determined by microscopy and histology in order to obtain withdrawal times earlier than 60 days. The committee generally supported the concept behind this letter, and a draft of the text was presented with the intention to circulate it among the entire committee at a later date.
The Committee met during the Annual Meeting in Minneapolis, Minnesota on October 11, 2022. There were members and guests present virtually, along with 60 members and 37 guests present in-person. The meeting was called to order at 10:16 a.m. by committee chair, Dr. Justin Smith. It was established that a quorum had been met for the committee to meet and vote on all business, including resolutions. The meeting agenda was presented including a review of the mission statement and the committee operating procedure.

Presentations and Reports

Data Analysis and Review of Greater Yellowstone Area (GYA) Bison Quarantine Procedures for Brucellosis

Objectives

American bison (Bison bison) quarantine protocols were established to prevent transmission of brucellosis outside the GYA while allowing for distribution of wild bison for conservation and cultural purposes. Over 170 wild bison have been corralled in the GYA, undergone the three-phase testing regime, and redistributed to Native American tribes. Quarantine standards were reevaluated using 15 years of laboratory and management data to potentially decrease the burden of testing and increase the frequency and number of brucellosis-free bison available for distribution.

Methods

A full statistical and management evaluation of the bison quarantine program was performed. Days in quarantine until a bison was detected as a positive brucellosis seroreactor were entered into a time-to-event simulation, establishing the risk of non-detection of a reactor by days in the quarantine program.
Results

At 300 days, 1 in 1,000 infected bison (0.0014 probability) would not be detected but could potentially seroconvert; by 365 days, fewer than 7 in 100,000 would not be detected. The model predicted 95% of infected bison will seroconvert by 210 days in quarantine, 99% will seroconvert by 250 days, and 99.9% will seroconvert by day 294.

Clinical Relevance

Reducing the quarantine program requirements to 365 days would allow for National Park Service (NPS), USDA, and Native American tribes to manage bison testing groups in coordination with seasonal movement of bison herds and triple the number of brucellosis-free bison available for distribution.

Certificate of Veterinary Inspections (CVI) Versus Alternative Movement Documents

Chelsea Good, Livestock Market Association

Panel: Dustin Oedekoven, National Pork Board; Tony Frazier, Alabama Department of Agriculture and Industries; Justin Smith, Kansas Department of Agriculture

Chelsea Good opened the conversation providing a brief explanation of the intended conversation and provided some background information on why the topic had come about. She offered the recognition that regulatory documents require some level of oversight and accountability. Because livestock market owners and dealers do fall under the oversight of the Packers and Stockyards (P&S), some have indicated they would be willing to allow proper documentation of movements be part of their P&S compliance requirements.

Dr. Oedekoven spoke on some of the history of CVI documents and why they came into existence. He further outlined some of the shortcomings of today’s CVI when it is viewed as a health document. He continued by describing some of the alternative movement documentation that are being used today in other species including some prescribed cattle movements.

Dr. Smith offered some insight into how alternative movement documentation could be used to alleviate some of the regulatory impediments to get better and more complete data. It is understood that the value of a veterinarian approved CVI cannot be underestimated when it comes to some movements and classes of animals. But could alternative documents be used in lieu of CVIs for those movements that presently don’t require much of a veterinarian exam or oversight?

Dr. Frazier provided some insight into how cattle from the Southeast tend to travel and how some level of alternative documentation could be used to provide documentation for traceability. He commented though that we need to realize that many new vets apply for USDA accreditation in anticipation of writing CVI’s. We want to make sure we don’t take away the incentive for veterinarians to get their accreditation.

The comments from the panel were followed by a series of comments and questions including:

- There are types of movements and classes of animals that could be conceivably moved via some type of alternative documentation.
- If something is developed and accommodated, it needs to be consistent and recognized by all states. There can’t be 25-30 different ways that a producer of operation needs to do things.
- It needs to be electronic based from the beginning with the details of the data transfer established from the beginning.
• Could the system work by providing accountability on the backend of the movement versus the origination? For example, most if not all feeder cattle that enter the Midwest feedlots are processed shortly after receiving. Can that be the spot that health is evaluated, numbers are validated and verify traceability?
• Possibly use the alternative documents as a trade for individual identifications being supplied.

Although not a formal motion, it was suggested that the Committee on Cattle and Bison develop a working group to possibly develop a “short list” of livestock species, livestock classes and the type of movements that might be considered for alternative movement documents.

Committee Business:
The business meeting continued. The subcommittee reports were copied and provided to the committee attendees. This packet included reports from the following subcommittees:
• Bovine Viral Diarrhea Virus (BVDV) – (did not hold a meeting at the annual meeting)
• Brucellosis
• Cattle Disease Traceability
• Trichomoniasis
• Tuberculosis

A motion was made and seconded to accept and approve the subcommittee reports as written and distributed. Past resolutions from 2019 and 2021 and the applicable subcommittee evaluation of the responses were presented. These were 2019 Resolution #2 and 18 combined from the Subcommittee on Tuberculosis, 2022 Resolution #32 from Subcommittee on Brucellosis, 2022 Resolution #34 and #35 from the Subcommittee on Cattle Disease Traceability. A motion and second was made to accept each of the subcommittee responses for each of the respective resolutions. Motion carried.

2022 New Resolutions
A resolution titled: Standardization of State Cattle and Bison Import Requirements Regarding Brucellosis was introduced by members of the Subcommittee on Brucellosis. It was moved and seconded to introduce it for consideration. Limited discussion and questions were received. The motion passed by majority vote.

Resolution titled: U.S. Cattle Trace was introduced by members of the Subcommittee on Cattle Disease Traceability. It was moved and seconded to accept it for consideration. Based on discussion that occurred in the subcommittee, sponsors of the resolution moved to amend, second was received. During the discussion of the amended resolution, a motion was made and seconded to amend the language. As part of that discussion there was a motion and second to consider an additional amendment. Additional discussion was debated. A motion was made and seconded to call for the question. The call for the question motion passed with a 2/3 majority vote. All amendment motions and the final resolution were passed with a majority vote. The final resolution title: Cattle Contact Tracing System.

A new resolution was introduced to the committee titled: USDA Standardization with Ultra High Frequency (UHF) Technology. A motion and second was made to consider this resolution. The resolution was debated extensively with several parties expressing that they felt the resolution was well intended but the ask was not accurately phrased and created some confusion as to what the exact outcome should be. The resolution failed by a majority vote.

No additional new or old business items were introduced or reviewed. A motion was made and seconded to adjourn the meeting.
Ethan Andress, ND; Maggie Baldwin, CO; Kerry Barling, KY; Nancy Barr, MI; David Baum, IA; Joy Bennett, NY; Randall Berrier, CO; Paola Boggiatto, IA; Tom Bragg, NE; Nancy Brown, KS; Beth Carlson, ND; Walter Cook, TX; Chase DeCoite, DC; Bud Dinges, TX; Brandon Dominguez, TX; Anita Edmondson, CA; Anita Edmondson, CA; Dee Ellis, TX; Heather Margaret Fenton, NT; Kaylie Fritts, NE; Robert Gerlach, AK; Michael Gilsdorf, MD; Chelsea Good, KS; Rod Hall, OK; Hallie Hasel, WY; Tricia Hebdon, ID; Janemarie Hennebelle, GA; Siddra Hines, WA; Dennis Hughes, NE; Andrew Johnson, WA; Jeffrey Kaisand, IA; Diane Kitchen, FL; Kavishti Kokaram, CA; Scott Leibsle, ID; Eric Liska, MT; Jim Logan, WY; Roxanne Lotts, WI; Sara McReynolds, KS; Andrea Mikolon, CA; Mendel Miller, SD; Gay Miller, IL; Jason Moniz, HI; Roxann Motroni, MD; Peter Mundschenk, AZ; Randy Munger, CO; Amanda Murray, CA; Cheryl Nelson, KY; Dustin Oedekoven, SD; Steve Olsen, IA; Mitchell Palmer, IA; Elizabeth Parker, TX; Boyd Parr, SC; Elisabeth Patton, WI; Amanda Price, UT; Valerie Ragan, VA; Jennifer Ramsey, MT; Suelee Robbe-Austerman, IA; Jonathan Roberts, LA; Shawn Schafer, OH; Patty Scharko, SC; David Schmitt, IA; Ryan Scholz, OR; Brant Schumaker, WY; Stacey Schwabenlander, MN; Andy Schwartz, TX; Laurie Seale, WI; Kathryn Simmons, DC; Justin Smith, KS; Steve Strubberg, MO; Tahnee Szymanski, MT; Dean Taylor, UT; Tyler Thacker, IA; Beth Thompson, SD; Dustin Weaver, GA; Thach Winslow, TN; Stephanie Wire, IL; Cristopher Young, CO; Marty Zaluski, MT.

The Subcommittee met on Sunday, October 9, 2022, from 8:00 a.m.– 9:55 a.m. There were 28 members and 30 guests present.

Presentations and Reports

GYA State Updates and State Reviews

Idaho

Scott Leibsle, Idaho State Department of Agriculture

Idaho currently has one domestic cervidae herd under quarantine for brucellosis. The affected herd of 350 head of domestic elk is located well within Idaho’s Designated Surveillance Area (DSA). In the fall of 2019, one cow elk sent to slaughter was identified as a reactor and, as a result, a whole herd test identified six additional affected elk. The reactor elk were slaughtered, and tissues collected. Genotyping of affected elk matched previous genotyping of brucellosis affected wild elk in the area. Upon epidemiological investigation, it was determined that a wild elk had gained ingress into the domestic elk facility during the prior 12-month period. No out of state movement, other than direct to slaughter, has occurred from the affected premises in several years. A second whole herd test was conducted in December 2020 and identified two (2) additional reactor elk. Both animals were removed, and the herd received another whole herd test in fall 2021 and the results were negative. The next whole herd test will be completed in fall/winter 2022. The herd will remain under quarantine until two whole herd negative tests and one negative post-calving test has been completed, in accordance with the signed herd plan.

In 2022, thus far, approximately 2,500 head of cattle have been tested to meet Idaho’s DSA testing requirements with more cattle to be tested this fall as they return from summer grazing. This number does not include DSA cattle slaughtered at facilities that continue testing for brucellosis, cattle from areas of the state outside of the DSA that were tested to meet other states import requirements, or cattle returning from DSAs in Montana and Wyoming. As of August 31, 2022, the USDA Idaho Brucellosis Laboratory has conducted a total of 333,575 brucellosis tests including live animal and slaughter samples.
The Idaho Department of Fish and Game (IDFG) continues to conduct wild elk surveillance within and outside the borders of Idaho’s DSA. Wild elk surveillance is rotated around the DSA boundary and any positives from previous years. In 2022-2023 the wild elk surveillance will focus on hunting units west of the DSA as well as along the Montana border northwest of our current DSA boundary. The Idaho Brucellosis Coordination Team, consisting of Idaho State Department of Agriculture (ISDA), IDFG and Idaho VS personnel, continues to meet annually to discuss surveillance and mitigation strategies and make improvements as needed.

In November 2021, USDA-APHIS-VS conducted a review of Idaho’s Brucellosis Management Program. Based on the recommendations from the 2021 USDA Brucellosis Program Review, the following activities will be performed:

- DSA cattle movement permits will be correlated with Idaho brand inspection records in the DSA area to verify cattle leaving the DSA have met testing requirements.
- Veterinary Services (VS), ISDA, and IDFG will work to collaborate in the risk assessment project started by IDFG.
- ISDA and VS will incorporate an appropriate kill and catchment area into each new Idaho slaughter plant to comply with the needs of the brucellosis slaughter surveillance system.
- IDFG will continue live-capture elk surveillance efforts along the borders of the DSA.
- ISDA will provide Idaho livestock markets, including Treasure Valley Livestock Auction in Caldwell and Blackfoot Livestock Auction in Blackfoot, as well as neighboring state markets and departments of agriculture with current lists of DSA producers on a biannual basis.
- Develop a backup plan for veterinary service at the livestock market closest to the DSA (Blackfoot Livestock Auction) in the event the resident accredited veterinarians discontinue their service to the market.
- Strengthen efforts to ensure all cattle leaving the Idaho DSA under private treaty sale or to an out-of-state market are appropriately identified and tested for brucellosis.
- Blood collection will be performed on animals over 24 months as required by Idaho regulation.
- Provide Idaho slaughter plants with updated, current lists of DSA producers to better facilitate identification and blood collection of test-eligible DSA cattle.

In March 2022, ISDA was pleased to welcome Dr. Holly Holman as the new Brucellosis epidemiologist, following the retirement of Dr. Debra Lawrence. Dr. Holman has been familiarizing herself with Idaho’s Brucellosis program and the cattle producers that reside and graze in the DSA. Dr. Holman and ISDA staff continue to review all existing individual brucellosis herd plans for producers within Idaho’s DSA and recommend changes when appropriate. New herd plans have been developed for nine more producers than the previous year. Out of Idaho’s 223 identified DSA residents or grazers, 220 have current herd plans on file with ISDA.

The ISDA and Idaho’s cattle producers remain committed to managing Idaho’s brucellosis program appropriately to prevent the risk of transmission of brucellosis from wildlife to cattle. The three (3) affected cattle herds identified since 2012 have all had extremely low intra-herd prevalence, including a herd of 549 head in which only one reactor was found, which verifies that our surveillance program and risk mitigation strategies are effective and being adequately and consistently enforced. The ISDA will continue to enhance the brucellosis program as necessary and promote industry support and assistance with enforcement of Idaho’s brucellosis testing requirements for cattle leaving the DSA.

Recently, the Idaho Animal Health Laboratory has agreed to participate in a pilot
program for two new indirect enzyme-linked immunosorbent assay (ELISA) tests for brucellosis (Veterinary Medical Research and Development [VMRD] and IDVET). In comparison to the current commercially available tests (buffered acidified plate antigen [BAPA] and fluorescence polarization assay [FPA] tube), these tests have a longer setup and testing time in addition to the fact that they are both more expensive. Based on several routine sample types tested so far, the IDVET more closely matches our FPA results. Additional testing with a variety of sample types is in process.

Montana
Martin Zaluski, Montana Department of Livestock

The state of Montana continues a high rate of livestock testing in the Designated Surveillance Area (DSA) for brucellosis to address the risk of brucellosis transmission from wild elk and bison. Approximately 90% of the DSA inventory is being tested on an annual basis. Due to robust testing, the state has been able to rapidly detect spillover events from wildlife with only 12 brucellosis positive cattle or domestic bison detected in nine herds in the last ten years in herds not known to be affected. The boundary of the DSA has been expanded five times since 2011 to include livestock at risk.

USDA-APHIS-VS has conducted a brucellosis program review in September 2022 with no significant negative findings. Approximately 12 states have testing requirements on DSA origin cattle even though the risk of exporting a brucellosis affected animal is well mitigated.

Wyoming
Hallie Hasel, Wyoming Livestock Board

Wyoming’s Brucellosis Designated Surveillance Area (DSA) boundaries were revised in 2011 based upon Wyoming Game and Fish surveillance data. Wyoming’s current brucellosis rules and surveillance program provide sufficient data to allow the state to remain brucellosis free with regards to trade.

Brucellosis surveillance within Wyoming is outlined in Wyoming Livestock Board’s Chapter 2 Brucellosis Management and Mitigation rules. The surveillance program requires brucellosis testing upon change of ownership and/or movement outside of the DSA, official brucellosis vaccination or spay of all female bovine, and slaughter surveillance of all bovine over 12 months of age at state inspected custom slaughter facilities.

Wyoming is a brand inspection state, requiring brand inspection between counties and out of state movement. Brand inspectors also verify compliance with brucellosis testing requirements for cattle moving within and out of the DSA. Wyoming is also able to gather a rough estimate of the number of cattle grazing within the DSA based upon brand inspection documents.

Due to demographic and land use changes, and continued drought conditions throughout western Wyoming, cattle inventory continues to decline within the DSA. Cattle inventory decreased 10% in 2022, with another decline expected in 2023. Brucellosis surveillance averages approximately 80,000 samples annually, with sample breakdown in the chart below.

<table>
<thead>
<tr>
<th>FY22 Brucellosis Testing in Wyoming</th>
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<tbody>
<tr>
<td><strong>Source</strong></td>
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<tr>
<td>DSA Ranches</td>
</tr>
<tr>
<td>Livestock Markets</td>
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<tr>
<td>Custom Slaughter Plants*</td>
</tr>
<tr>
<td>Non-DSA Ranches</td>
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<tr>
<td><strong>TOTAL</strong></td>
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</table>
Brucellosis risk mitigation assessments and herd plans are encouraged for all herds grazing within the DSA. Herd plans provide owners with brucellosis mitigation recommendations based on their risk assessment. Data from Wyoming Game and Fish Department (WGFD) wildlife brucellosis surveillance also aids in determining overall risk for DSA cattle. Approximately 200 herds currently reside, either full or part-time, within the DSA. WLSB maintains 160-200 herd plans with annual renewal for DSA herds.

WLSB has three additional sets of rules relating to brucellosis: Chapter 6 Brucellosis Mitigation Activities and Compensation, Chapter 20 Indemnity rules, and Chapter 25 Brucellosis Quarantine Mitigation Expense Reimbursement. Wyoming enjoys an excellent interagency working relationship between the WLSB, Wyoming State Veterinary Laboratory, WGFD, Wyoming Department of Health, and the USDA Animal and Plant Health Inspection Service. This enables us to fluidly and transparently deal with all the issues surrounding Brucellosis in the DSA.

National Brucellosis Eradication Program Update
Mark A. Lyons, USDA-VS

The National Brucellosis Eradication Program (NBEP) has been very successful in moving toward the goal of nationwide eradication of brucellosis from domestic cattle and bison. This program was initially designed as a cooperative effort between the federal government, the states, and livestock producers, and it is the ongoing collaboration, support and participation which allows us to continue to toward this goal.

While national eradication in cattle was mostly achieved by the early 2000s, the presence of brucellosis in free-ranging bison and elk in the Greater Yellowstone Area (GYA), Yellowstone National Park and Grand Teton National Park continues to threaten the brucellosis status of the surrounding States and the health of their cattle and domestic bison herds, which are free of the disease. Since 2011, there have been no affected herds outside of the GYA and all 50 states are considered Brucellosis-free; however, we have continued to find an average of 2.6 affected herds in the GYA each year since 2010 with two affected herds identified through surveillance testing activities in Fiscal Year 2022.

As this became a more geographically isolated disease, Animal Plant Health Inspection Service (APHIS), Veterinary Services (VS) works closely with the GYA states (Idaho, Montana, and Wyoming) to support the design and implementation of State programs, reviewing each State’s program on a rotating basis. The ongoing success of these programs and partnerships have allowed each state to identify Designated Surveillance Areas (DSA) within each state and create a structure to support ongoing surveillance. This allows us to identify affected herds at very early stages of disease progression within the herd, thereby limiting disease spread both within the herd and out of the DSA.

VS was also recently asked to provide input on quantifying the benefits and risks of delisting Brucella as a Select Agent, which could significantly reduce the financial, administrative, and physical barriers to conduct wildlife research on Brucellosis. If this hurdle were removed, the research opportunities this could create have the potential to increase the likelihood of eliminating Brucellosis in wildlife, thereby enabling the United States to become Brucellosis-free and reduce some of our present trade barriers.

Finally, the NBEP continues to look for opportunities to improve and advance the program toward the overarching goal of eradication. In 2019-2020, VS refined the national slaughter surveillance plan by moving into a more targeted surveillance strategy, increasing the proportion of samples being collected from animals originating in GYA states while still exceeding the national target of 350,000 slaughter surveillance samples collected per year. VS is also continuing efforts to develop the domestic brucellosis proposed rule and program standards, which are currently under review and anticipates publishing for public comment in 2023.
Subcommittee Business:
The business meeting was called to order. A review of attendees indicated that a quorum was present for voting purposes. The co-chairs discussed Resolution #32 from 2019; it should be “pending” rather than “complete” on the USAHA website based on feedback from members. The response received in 2020 was sufficient at the time with additional follow-up now requested from Veterinary Services on the recently formed Brucella delisting working group. The requested follow-up is to include members, goals and objectives, and timelines associated with the previously mentioned working group.

A new business item was introduced with a motion to approve the resolution entitled Standardization of State Cattle and Bison Import Requirements Regarding Brucellosis. The resolution passed with a majority vote of subcommittee members and was submitted for consideration by the Committee on Cattle and Bison. No additional new or old business items were introduced or reviewed for 2022. A motion was made to adjourn the meeting.
Successful bovine viral diarrhea virus (BVDV) control strategies generally involve a multipronged approach that incorporates detection, intervention strategies and biosecurity. Surveillance of cattle and samples from fetuses at harvest facilities provide a snapshot and overview of potential prevalence patterns and frequencies that may exist. Data from these surveillance data are important to assess detection, intervention strategies and biosecurity as it relates to BVDV.

Comparative Serology Surveillance:

U.S. Department of Agriculture (USDA), Animal Plant Health Inspection Service (APHIS), Cattle Fever Tick Eradication Program (CFTEP) monitor a quarantine zone along the Texas border to prevent the introduction of stray livestock carrying cattle fever ticks entering the U.S. from Mexico. Stray cattle collected by CFTEP are checked for ticks and several infectious disease-causing pathogens, but not for BVDV. BVDV is one of the most economically impactful viruses affecting U.S. cattle producers. BVDV is present in all parts of the world, but it has been demonstrated that another distantly related pestivirus, HoBi-like pestivirus (HoBiPev), can also cause BVD. To date HoBiPev has not been detected in the United States, but commonly found in Brazil, and sporadically in Europe, and Asia. The objective of the current study was to evaluate the seroprevalence of pestiviruses, with a specific focus on HoBiPev, in stray cattle. Virus neutralization (VN) assay was used to determine seroprevalence (or antibody titers) of BVDV-1, BVDV-2, and HoBiPev. Approximately 50% (67 of 134) samples were seropositive for pestiviruses, all 67 positive samples were positive (50%) for BVDV-1, 66 samples of the 67 were positive (49.3%) for BVDV-2 and the same 66 samples of the 67 were also positive (49.3%) for HoBiPev. Due to the antigenic cross-reactivity among Pestiviruses, the comparative antibody against each pestivirus was calculated from all VN-positive samples. Titers were clearly higher against BVDV-1, and only one sample had a titer clearly higher against BVDV-2. No sample had an antibody titer higher for HoBiPev, and while this does not prove the absence of HoBiPev, it does provide evidence that the prevalence of HoBiPev is less predominant than BVDV-1. Additionally, data from these samples provide evidence on the susceptibility of animals that may enter into the U.S., with approximately 50% of the animals were seronegative for bovine pestiviruses.

BVDV subtgenotypes from BVDV positive fetuses collected at abattoirs:

BVDV is classified into two genotypes, BVDV-1 and BVDV-2, each of which contains distinct subtypes with genetic and antigenic variation. To effectively control BVDV by vaccination, it is important to know which subtypes of the virus are circulating and how their prevalence is changing over time. Accordingly, the purpose of our study was to estimate the current prevalence and diversity of BVDV subtypes from fetal bovine serum determined to be positive by BVDV specific enzyme-linked immunoassay (ELISA).
at Cornell University Diagnostic Laboratory. Phylogenetic analysis of the 5′-UTR (5′ untranslated region) was assessed for 157 positive FBS samples. Of the 157 samples, 41 did not yield a sequence leaving a total of 116 strains that were able to be characterized. For samples that were sequenced, the virus strains revealed that a majority (82%) belonged to genotype 1b, and the remaining strains were distributed between genotypes 1a (2%) and 2a (16%).

These two populations of samples from cattle provide a unique opportunity to evaluate and monitor changes in seroprevalence as well of prevalence of genotypes and subgenotypes of BVDV. This data provides the opportunity to monitor potential changes or introductions or novel pestiviruses to the U.S. cattle population.
The Committee met during the 2022 Annual Meeting in Minneapolis, Minnesota on October 9, 2022. There were members and guests present virtually, along with 28 members and 56 guests present in-person. The Chair went over housekeeping items with slides to include sign-in, a review of the Committee Mission, the definition of a member, what rights they have, and the agenda.

Presentations and Reports

Challenges and Solutions Encountered with Animal Disease Traceability (ADT) (panel)

Compliance and Traceability on Cattle Diverted During Shipment
Charlie Broaddus, Virginia Department of Agriculture
Thach Winslow (sitting in for Scott Rydberg), Vet Sentry
Mitch Fredin, Fredin Brothers Cattle

Dr. Broaddus opened describing a scenario in which stocker cattle are assembled and sold prior to their confirmed destination being known, or all or part of the consignment being diverted during shipment resulting in inaccurate data being collected and entered into traceability databases through the automated xml delivery process. Even when amended, the xml standard does not facilitate replacement or retraction of amended data.

Dr. Winslow explained a process compliant with the ADT rule and developed by VetSentry allowing the amendment and re-issuance of a certificate of veterinary inspection (CVI) by delaying the xml transfer of data to the states of origin and destination 72 hrs.

Mitch Fredin explained the process from the producer (consignor) viewpoint outlining the step-by-step process of requesting a CVI, veterinary inspection and approval, reconsignment, CVI amendment, re-approval, issuance, and data sharing.

Dr. Broaddus followed up with the end results and compliance.
Alternate Movement Document

Janemarie Hennebelle, Georgia Department of Agriculture

Dr. Hennebelle outlined a memorandum of understanding (MOU) between Alaska, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina and Tennessee in which a “Permit for Interstate Movement” is being allowed by rule “in lieu of an interstate certificate of veterinary inspection (ICVI)” for animals moving from a livestock (LS) Market.

Information collected includes: Premises Identification (ID) of the auction market, Back tag, Official ID, Species, Breed, and Gender of the animal, and destination.

Interstate movement of dairy calves

Andy Schwartz, Texas Animal Health Commission

Large dairies in states outside of Texas send 1-10 day old dairy calves to large calf raisers on a daily basis. This presents a challenge to obtain accurate certificate of veterinary inspections (CVI) on a timely basis for each load. It’s also challenging for Texas Animal Health Commission (TAHC) staff to verify arrival and track each animal to make sure a tuberculosis (TB) test is conducted at 2+ months of age.

TAHC built a database and established a system for importing these calves that utilizes radio frequency identification (RFID), assures the accuracy of shipment data, and electronically shares data between the sending and receiving state (Texas). An agreement is established with the source dairy and herd veterinarian and other appropriate parties to assure the herd is examined at least monthly.

RFIDs are scanned as calves are loaded at the source dairy, and the data file is sent to TAHC. RFIDs are scanned again as calves are offloaded at the calf ranch in Texas. The calf ranch reconciles any discrepancies in ID’s, number of animals received, etc. and these data are uploaded to TAHC’s database. TAHC staff then track each animal and use features built into the database to make sure all animals are accounted for and TB tested per entry requirements.

In an 18-month trial period, there were 134,334 calves from 11 dairies tracked to a calf ranch in Texas using this system. This eliminated the need for 7,597 CVIs, and vastly improved efficiency at both ends of these movements. TAHC has ended the pilot and made this a permanent option for baby calf importation and is looking to expand use to more source dairies in other states.

Authorization for interstate movement of sexually intact cattle using an alternative to a CVI is found in 9 CFR 86.5(6).

Bottom Up - Industry Focused Approach to Implementing Animal Disease Traceability (ADT)

David Hecimovich, Washington State Department of Agriculture

In 2013 when USDA transitioned to the new ADT framework, this set a new direction for expectations for animal health officials…can have the ability to trace an animal one step forward and one step back “quickly” in an animal disease event. To accomplish traceability in a timely manner, it required moving from paper-based methods to store and retrieve records to electronic. The State developed a Bookend System, to house regulatory veterinarian information that can trace livestock from their birth premises to harvest utilizing official individual identification and veterinarian regulatory documents; the core of the Bookend System is the Interstate Certificate of Veterinary Inspection (ICVI), Brucellosis Vaccination, and Brucellosis/Tuberculosis (TB) test records.

At the end of the day, we try to incentivize, to make it work for the producer and the vet first and then we (government) benefit with traceability information. We continue to ask our industry groups for additional pilot projects to work with their needs and not ours (at first) to advance animal disease traceability in the state.
The panel presentations were followed by a series of comments, questions, and answers including:

- Incentives and actions to convert users from paper to electronic Certificate of Veterinary Inspections (CVI’s). These included charging for paper and direct regulation.
- Incentives for using electronic identification (EID) – free tags, reduced inspection fees
- USDA Preemption over states in regard to Animal Disease Traceability (ADT) requirements – It was reported that USDA management has expressed intent to be “reasonable” in their application of ADT rules in that realm.

Committee Business:

The meeting was brought to order by the Chair. There was no old business to attend to. Two resolutions (2019 #34 and #35) were presented to the committee as having had no action. Based on the historic nature of the resolutions with no current relevance for action, it was recommended by the chair to inactivate each. In both cases a motion from the floor was properly made and seconded to inactivate the resolution, opened for discussion, and passed by majority vote.

A new resolution titled *U.S. Cattle Trace* was introduced, a motion to approve and pass up to the parent committee (Cattle and Bison) which was properly seconded. Discussion included the need for such a database from the sponsor as well as questions centered around state and federal inclusion in the request for action, and the specific inclusion of Cattle Trace as the database instead of more generic verbiage. The motion passed by a majority vote.

With no time remaining for further topics, a motion was made and seconded and passed to adjourn.

The chair and vice chair reviewed 2021 resolution on *Ultrahigh Frequency Backtags* in light of USDA’s response and found it appropriate to leave it in pending status.
CATTLE AND BISON

SUBCOMMITTEE ON TRICHOMONIASIS
Chair: Carl Heckendorf, CO
Vice Chair: Jim Logan, WY

Gary Anderson, KS; Maggie Baldwin, CO; Kerry Barling, KY; Nancy Brown, KS; S. Peder Cuneo, AZ; Chase DeCoite, DC; Bud Dinges, TX; Roger Dudley, NE; Anita Edmondson, CA; Heather Margaret Fenton, NT; Kaylie Fritts, NE; Rod Hall, OK; Carl Heckendorf, CO; Janemarie Hennebelle, GA; Terry Hensley, TX; Carla Huston, MS; Jeffrey Kaisand, IA; Diane Kitchen, FL; Kavishti Kokaram, CA; Scott Leibsle, ID; Jim Logan, WY; Amanda Murray, CA; Cheryl Nelson, KY; Dustin Oedekoven, SD; Boyd Parr, SC; Amanda Price, UT; Jonathan Roberts, LA; Ryan Scholz, OR; Kathryn Simmons, DC; Shri Singh, KY; Justin Smith, KS; Tahnee Szymanski, MT; Dean Taylor, UT; Beth Thompson, SD; Cristopher Young, CO.

The Subcommittee on Trichomoniasis met during the Annual Meeting in Minneapolis, Minnesota on October 9, 2022, at 7:00 a.m. There were members and guests present virtually, and 47 members and guests present in-person.

The Subcommittee members were reminded of the Mission Statement: “To provide a forum for the latest science and regulatory for control of trichomoniasis in cattle.”

The subcommittee chair and vice chair had invited diagnosticians from three veterinary diagnostic laboratories (VDL) that are active in development, application, and validation of polymerase chain reaction (PCR) based bovine trichomoniasis diagnostic tests to develop best practice guidance for this testing as part of a diagnostics working group. The objective of the working group was to provide information for state animal health officials (SAHOs) to evaluate VDLs that perform bovine trichomoniasis PCR based testing to inform their import requirement decisions.

Bovine trichomoniasis is subject to import requirements by numerous states as it causes significant economic cost to cattle producing states. Currently there are no formal requirements or proficiency exercises for laboratories conducting this testing and regulations are determined by individual states and their livestock import regulations.

Working Group Members were: Suzanna Leckman, Colorado Department of Agriculture Animal Health Laboratory; J. Dustin Loy, Nebraska Veterinary Diagnostic Center (UNLVD); and Berit Bangoura, University of Wyoming Veterinary Diagnostic Laboratory. Each gave a brief summary of their concerns and ideas and then participated in a panel discussion.

Suzanna Leckman - The Animal Health Laboratory in Colorado has done extensive validation of Trich testing using the IDEXX real time (RT)-PCR. This work has allowed the laboratory to begin accepting trich samples in phosphate buffered saline (PBS) and saline up to six days after sample collection.

Dr. Berit Bangoura - Currently, there is a high diversity in trichomoniasis test methods that are applied in different states, which may vary in sensitivity and specificity. Sample collection method and media as well as environmental factors during sample transport may contribute to a greater variability of test sensitivity. Based on regional conditions, tests may be validated for different transport and test conditions to ensure test result validity. Laboratory Best Practices for Bovine Trichomoniasis Testing.

Dr. Dustin Loy - UNLVD has onboarded and validated for use the reverse transcription real time PCR method developed by Summarell (Journal of Veterinary Diagnostic Investigation (JVDI) 2018). Stability studies were conducted in 2020 which provided an evidence base to support our sample collection and transport guidelines. These included using laboratory provided Phosphate Buffered Saline (PBS) tubes, which was done to enhance quality and throughput for laboratory processing. Smegma samples from bulls must be collected, maintained at refrigeration temperatures, and received at the laboratory within five days of collection. Pooling of up to five samples is allowed. Additional extended times are provided for samples that are frozen. Collection in alternative media is allowed, provided it is a Tritrichomonas foetus (TF) transport tube or a TF In-pouch.
Panel Discussion

In preparation for the meeting, the Chair, Vice Chair, and our three panelists had drafted some proposed “best practices” for trichomoniasis diagnostics to be presented to subcommittee members with the intent to eventually share with state veterinarians as guidance to inform regulatory decisions. Subcommittee members wanted to study the “best practices” and discuss with laboratorians. It was suggested that we could conduct a survey of laboratories that do trichomoniasis testing to gauge their interest and ability to utilize the proposed protocols and conduct testing accordingly.

Proposed Best Practices

The Veterinary Diagnostic Laboratory (VDL) should be accredited as a testing laboratory to ensure technical and operational competence compatible with appropriate testing standards. Relevant bodies that accredit VDLs include the American Association of Veterinary Laboratory Diagnosticians (AAVLD) and various organizations which offer accreditation under the International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) 17025 standard for testing laboratories. Laboratories should have a quality system that enables SAHOs to ensure best laboratory practices are followed. Accreditation standards ensure test results are accurate and that the testing performed has been validated for use.

There are commercial testing kits available that have been validated and assessed by manufacturers for bovine trichomoniasis. These are available to laboratories that may not have robust capacity to validate in-house testing procedures. Additionally, there are publications (Summarell et al JVDI 2018), that provide peer reviewed published assays for testing laboratories to adapt. It is recommended that laboratories use assays based on published literature, provided by a government or international testing body (USDA, World Organisation for Animal Health (OIE), etc.) or utilize commercially available tests for their trichomoniasis testing. AAVLD requirements for example, indicate that a standardized test method (OIE) is appropriate, however, in the absence of this, test methods validated for use require ongoing documentation of laboratory performance using a known standard and endorsement by a technical organization, publication in a peer reviewed journal with sufficient documentation, or documentation of a comparison to an accepted laboratory method. This group recommends SAHO’s be familiar with the testing method the laboratory is using, as the interpretation of results may vary depending on the testing approach.

Trichomoniasis testing involves a detailed collection procedure and several different types of transport media have been used for testing in the past. Additionally, in many Western states the distance from testing laboratories and cattle populations prohibits overnight delivery of samples. Laboratories should provide evidence-based guidance to veterinarians on the types of transport media they allow, the shipping conditions permitted, and the transport time before arrival in the laboratory that is optimal for quality testing results.

Regular and timely guidance relative to the respective states of practice should be provided for veterinarians collecting and submitting trichomoniasis samples. This may include training, certifications, educational materials, or other necessary information as determined by SAHOs to ensure optimum sample collection and transport for testing.

Appendix - Suggested information to collect from testing laboratories:

1. Is your laboratory accredited? If so, who is the accrediting body and when does your accreditation expire? If not, which type of ongoing proficiency testing do you employ?

2. Are you using a commercial kit for nucleic acid extraction and PCR? If so, which kit? If not, please describe the reagents and briefly explain the protocols you are using (cite relevant literature, if applicable).

3. Which sample submission media are you accepting, and has their use been validated for your laboratory?
4. Which sample transport time window is acceptable in your laboratory (from sampling to receiving by your laboratory), and has this time window been validated at your laboratory for your current Trichomoniasis test protocol?

5. Do you allow for a pooled samples testing option, and if so, up to how many samples are pooled in your laboratory?

6. Does your state require veterinarians collecting the samples to be certified for trichomoniasis testing?

7. How many replicates do you routinely analyze per diagnostic sample?

Subcommittee Business:

The discussed protocols and proposed best practices and appendix will be circulated to the subcommittee membership for comment to be summarized and shared with the parent committee.

The Subcommittee on Trichomoniasis requests that the Committee on Cattle and Bison and USAHA provide this information to all state veterinarians.
The Subcommittee held a virtual meeting prior to the 2022 Annual Meeting that was hosted by Dr. Beth Carlson and the North Dakota Department of Agriculture on September 28, 2022. There were 42 virtual participants at this session. The meeting included updates on tuberculosis activities from the following state animal health officials:

- **Dr. Beth Thompson**, State Veterinarian, South Dakota Animal Industry Board
- **Dr. Marty Zaluski**, State Veterinarian, Montana Department of Livestock
- **Dr. Andy Schwartz**, Executive Director and State Veterinarian, Texas Animal Health Commission
- **Dr. Ralph Zimmerman**, State Veterinarian, New Mexico Livestock Board
- **Dr. Isaac Maeda**, Administrator, Animal Industry Division, Hawaii Department of Agriculture
- **Dr. Mike VanderKlok**, Cattle Programs Manager, Michigan Dept of Agriculture and Rural Development

The session also included a presentation from **Dr. Kim Signs**, Emerging and Zoonotic Infectious Diseases Section, Bureau of Infectious Disease Prevention, Michigan Department of Health and Human Services, on Zoonotic Cases of *M. bovis* in Michigan.

The Committee met during the 2022 Annual Meeting in Minneapolis, Minnesota on October 10th. There were members and guests present virtually, and 89 members and guests present in-person. 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 Subcommittee on Tuberculosis (TB), as well as the process for recommendations and resolutions.

**Presentations and Reports**

**National Tuberculosis (TB) and Cervid Dual Path Platform (DPP) Testing Update**

**Mark A. Lyons**, USDA-APHIS-VS, Strategy and Policy

The National Tuberculosis Eradication Program (NTEP), which is administered by
Animal and Plant Health Inspection Service (APHIS) Veterinary Services (VS), State animal health agencies, and U.S. livestock producer has nearly eradicated bovine tuberculosis (TB) from the Nation’s livestock population since its inception in 1917. The presence of bovine TB in humans has also been reduced because of several factors, including the eradication program and pasteurization of milk. Many consider this one of the great animal and public health achievements in the U.S.

Today, the prevalence of TB in cattle, bison and captive cervids is extremely low in the U.S., occurring roughly seven times per one million cattle herds on an annual basis. Further, removing known infected herds operating under management plans and herds located within the wildlife endemic areas of Hawaii and Michigan results in an incidence of ~four affected herds per 750,000 total herds (i.e., one affected herd per 187,500 total herds). The incidence rate has also remained relatively stable with an average of 2.9 herds detected each year since 2013 with most of these cases being new TB strain introductions based on whole genome sequencing (WGS).

The U.S. continues to conduct TB slaughter surveillance at a level which exceeds the program goal of submitting one granuloma for every 2,000 head of adult cattle slaughtered. During FY21, 5,760 granulomas were submitted out of 7,079,787 adult cattle slaughtered, achieving a surveillance level of 163% of the goal. Reviewing slaughter surveillance data since 2013, there has been an overall decrease of positive cases in both domestic- and Mexican-origin cattle at slaughter. However, there has not been a corresponding decrease in the number of Mexican-origin cattle imported and tested at slaughter which indicates the introduction of new TB strains into the national herd is less likely related to these movements, suggesting the presence of a yet unknown pathway of TB introduction into the national herd.

National Tuberculosis (TB) Research Initiative
Tyler C. Thacker, Kimberly Lehman and Claudia Perea, USDA-APHIS-VS, National Veterinary Services Laboratories (NVSL)

The Bovine TB Initiative was started in 2020 to improve the tools available to the Bovine TB Eradication Program. The initial program has five components: 1) test the efficacy of the TB vaccine, Bacille Calmette-Guérin (BCG), in active dairies in a high endemic area; 2) modernize ante mortem diagnostics; 3) improve source attribution (including the World M. bovis Project) and biosecurity; 4) advance vaccination of deer against TB; and 5) improve slaughter surveillance in the U.S.

Vaccination: To date, 1254 calves have been vaccinated with BCG in four dairies in Baja California Mexico. Vaccination will continue with the goal of enrolling 6,000 animals. The U.S. and Mexican officials are working together to perform ante mortem testing and to follow enrolled animals to slaughter to evaluate the effect of vaccination on pathology and infection.

Diagnostics: To improve ante mortem testing, the project is evaluating the QuantiFERON Gold in-tube stimulation assay to evaluate interferon-gamma responses. To date, just over 1,000 samples have been collected, most from uninfected herds to evaluate specificity of the test. The next phase will be testing infected animals to evaluate the sensitivity of the assay.

Source Attribution: Through the World M. bovis Project, USDA has worked with Honduras, Costa Rica, and Guatemala to obtain and sequence isolates from each country. In addition to these isolates, NVSL has added an M. bovis sequences from Algeria, China, Brazil, Poland, Bulgaria, Madagascar, South Korea, Chile to the National Veterinary Services Laboratories (NVSL) database. These isolates will aid in identifying the potential sources of introduced of strains of M. bovis into the U.S. To identify animals, in large herds, that are at a higher risk of being involved in ta transmission events, in-depth herd investigations methods continue to being developed. The analysis combines herd movement/management data with genotyping data to identify potential transmission...
events in the herd and the animals associated with the event. Improved Surveillance: Slaughter surveillance continues to be the primary method to detect infected herds in the U.S. To increase the effectiveness of slaughter surveillance, flipbooks with pictures of a variety of lesion presentations were published and distributed to facilities across the U.S. To date, 535 have been distributed.

Review of Proposed Tuberculosis (TB) Rule and Update on Status
Mark A. Lyons, USDA-APHIS-VS, Strategy and Policy

To better understand the dynamics of today’s TB introductions, and to better address changes in industry designs, surveillance capabilities, and resource needs, it is becoming increasingly important to review and update the TB rule. Veterinary Services is continuing efforts to develop the domestic bovine TB proposed rule and program standards and anticipates moving the workplan forward for review early in 2023. However, a reasonable estimate of the publication date is not yet possible. The Office of Management and Budget’s designation of the rule as either not significant, significant or economically significant will greatly affect the overall timeline for publication.

Committee Business:

There were no new resolutions or recommendations presented for consideration at this meeting. The Subcommittee discussed the USDA response to the following resolutions from 2021 and forwarded the accompanying assessment of the response the Committee on Cattle and Bison:

2021 Resolution #2: Usage of the Interferon Gamma Test and Approval of National Animal Health Laboratory Network Laboratories to Conduct the Interferon Gamma Test Status: Sufficient Progress – but not complete. The Subcommittee indicated that although there has been progress on attempting to validate a new Gamma Interferon test, USDA should develop a timeline for completing the validation of this test and creating and implementing a proficiency process to approve laboratories to run the test. USDA should also implement policies or procedures that provide more opportunity for collection and submission of samples to NVSL for the current gamma interferon test.

2021 Resolution #20: Tuberculosis Testing for Importation of Rodeo Cattle from Mexico Status: Request denied.

Addendums to the subcommittee report:

State Updates given during virtual meeting by six states which are currently investigating or have recently investigated cases of bovine tuberculosis (TB):

South Dakota
Beth Thompson, South Dakota Animal Industry Board

South Dakota’s most recent TB detection was in Corson County; the herd was released from quarantine in January 2022 after completing a series of TB tests. Annual assurance testing will continue. Trace outs are also complete. SD state regulatory officials are performing a risk analysis on additional adjacent herd testing.

Montana
Marty Zaluski, Montana Department of Livestock

Montana is still conducting follow-up testing on confirmation of tuberculosis in a Blaine County Montana beef herd in 2021 that was detected through a slaughter trace. Approximately 5,000 animals in high risk trace herds were tested in fall of calendar year (CY) 2021, and approximately 4,000 animals in lower risk herds (fence line contacts with separation) are scheduled for testing in fall of CY year 2022. Wildlife surveillance in the area has so far been negative and will be continued.
A second slaughter trace in 2021 resulted in herd testing of a beef herd in Madison County, Montana. No additional positives were identified, and an assurance test is scheduled for fall of CY 2023.

New Mexico

Ralph Zimmerman, New Mexico Livestock Board

TB in New Mexico (NM) dairy cattle has been the greatest demand of time and money for our agency. NM has had three new herds this year adding roughly 31,000 more head under quarantine. Two herds have the same owner and a third herd in Texas, where the trace originated, but these are all really New Mexico cattle, even though the business plan takes first lactation milkers to Texas for a while. The third new herd is a Jersey herd with about 11,000 head. All the affected herds on the eastern side of the state, with drive times from 3-5 hours from the office in Albuquerque. This is a large factor in utilizing the limited budget on travel expenses. NM could not do this without the help of federal partners and has teamed well with local Veterinary Services partners and volunteers from out of state.

NM has been dealing with bTB since early 2017, when there was a slaughter trace to a herd in Artesia, New Mexico. The herd raised heifers with a sister herd, and both herds required testing because of commingled heifers. One herd was off quarantine and had three negative annual assurance tests when the herd was dispersed. The second herd was released from quarantine in September 2019 and had a positive cow on their first annual assurance test. This turned out to be a new strain, novel to this country. The initial strain was eradicated. The herd was placed under quarantine again in October 2020 and recently released from quarantine in August 2022. This freed NM of about 6,000 head being tested every 90 days.

Significant progress is finally being made on the Dexter complex, just south of Roswell, NM. This was a positive slaughter trace and had a single heifer facility raising hutch calves for four dairies, which forced the testing of all four herds (about 24,000 head) every 90 days. They finally had one herd achieve vertical integration, and they came off quarantine without having a positive case. This too, was a novel strain to this country. The index herd has produced 26 positive cows. One dairy has had four positive cows, and the third has had a single cow. Testing is in the fourth year, and last year received a boost from an evaluation from Dr. Lombard and Dr. Camacho, helping pick out high risk groups. The herd is now one negative test away from going to six months and the validation/quarantine removal test. Testing staff will be back there in late October. Banker issues have made things far more difficult than they needed to be, but it now looks like they will get this produce and his 270 employees through this without going under.

An 11,000 head Jersey herd in Hobbs, NM, was a positive slaughter trace as well. They are waiting for culture results on the second test but having nothing positive so far. Results should be in within the next two weeks. The owner has had to put his embryo program and showing promotions on hold. About 150 of the best cows float the rest of them. He has marketed genetics all over the country, and the rest of the herd provides milk for a cheese plant.

The newest herds are in Clovis, NM, and include a trace from Texas off a cow tested for movement. First lactation cows, once pregnant, are shipped to Texas to the third dairy in Canyon. They are tested leaving New Mexico, and again on the return trip. The NM dairies have about 23,000 head, which includes heifers being custom raised, and beef on dairy calves that are sold at 600lbs. A field veterinarian is located on the east side of the state, so all shipped feeder calves are tested as they are sold. The state is completing the second whole herd test in October of 2022. The producer appealed the indemnity, so cattle could not be necropsied until this was settled. Once that was resolved, there were five histocompatible samples with polymerase chain reaction (PCR) positives on the two they ran. Culture results are expected soon, but the Texas cow was another novel strain.
Consistent funding has been an issue, both from federal co-ops, and the state. This producer has been difficult, and felt that everything was a negotiation, but once the first positive results started coming in, he has been more willing to get on board. Although NM has not had Avian Influenza (AI), it is affecting the state’s ability to bring in help for testing, with so many of the federal veterinary medical officers (VMO’s) being deployed. The state can train folks for Comparative Cervical Tests (CCT), so if other states have new staff that need training, they are willing to trade training for help. Dr. Sean McCartney with the local Veterinary Services office provides the training.

Hawaii
Isaac Maeda, Hawaii Department of Agriculture

The entire island of Moloka`i is under state quarantine for a bovine tuberculosis outbreak that started in June 2021.

Multiple bTB outbreaks occurred on Moloka`i between 1940-1985 mainly on the East end of the island. Historically bTB infection has been identified in axis deer, feral pigs and mongoose. Complete island depopulation of cattle of >9000 head occurred between 1985-1986, due to infection identified in Central Moloka`i. Subsequent staged reintroduction of cattle over several years with testing resulted in no detections of bTB until 1997. In 1997 a single cow from Ualapue (East end of island) was found infected at slaughter. The infected herd was depopulated, with no additional lesioned animals detected. Five thousand (5,000) head from the East, Central Moloka`i and Maui were also tested, and all found negative in that investigation. As a result, the East end of the island has undergone annual bTB herd testing under agreement with USDA-APHIS since 1998.

The index herd of the current outbreak was initially located in Ho`olehua (Central Moloka`i) but moved to Mapulehu (East end) because of food shortage resulting from drought. Pre-movement testing for the herd to return to Central Moloka`i was initiated in April 2021 but aborted due to inclement weather. Re-test in June identified a reactor which was sacrificed and found infected with bTB. The remainder of the herd was depopulated though slaughter with six other head found infected. One other contact herd was found infected, from the investigation, and depopulated.

A second cluster of infection was identified in November 2021 when four swine from a farm in West Moloka`i were processed at the Moloka`i Cooperative slaughter plant. This farm consisted mainly of swine with a few head of sheep and cattle and was subsequently depopulated. Three contact cattle herds were also found infected and two of those herds were depopulated through test/slaughter. The last remaining herd is similarly undergoing depopulation. Six herds have been found infected on the island to date.

Wildlife studies are necessary to determine prevalence in wildlife; wildlife populations and movements; and contact rates with livestock. Results may be used to determine what control measures are necessary for Bovine Tuberculosis (bTB) in livestock on the island Moloka`i.

Michigan
Mike VanderKlok, Michigan Dept of Agriculture and Rural Development

The occurrence of self-maintaining M. bovis (TB) in free-ranging deer in a portion of northeastern Lower Michigan is unique in the United States. Unique characteristics of this area such as large private land holdings used primarily for deer hunting, large scale feeding of deer, and an avoidance of harvesting of females led to deer populations and densities that allowed for this disease to become maintained in deer. Cattle raising practices in this same area used the same habitat as deer, including storing cattle feed and feeding large amounts of feed in areas that were also inhabited by deer. Deer and cattle became habituated together in the same places and sharing the same resources. These conditions allowed for M. bovis, which has the ability to remain viable and infective for weeks and months outside a host, to be transmitted between deer and cattle without
direct contact. These practices are unique to this area of Michigan (and likely the rest of the United States) and have been in place for generations. Eliminating *M. bovis* requires changing these practices and, at its core, changing cultures.

Michigan has two zones in the National TB Eradication Program: a Modified Accredited Zone (MAZ) that includes four counties in Northeastern Lower Michigan and a TB Free Zone including the remainder of the state including the Upper Peninsula. Over 95% of all cases of TB found in Michigan have been in the MAZ and the MAZ includes a central core area that contains over 90% of all the TB cases. Michigan’s TB program is focused on reducing the occurrence of TB in cattle herds, quickly identifying and controlling the potential for spread when it is found, and eventually preventing the occurrence of TB in cattle herds while at the same time working toward eliminating the disease in deer. It is likely that success in cattle will occur on a shorter time frame than can be achieved in deer. Since the disease was first discovered to be endemic in the wild deer in 1995 these efforts have led to a reduction in the average number of TB infected cattle herds from four per year to less than two per year and reducing the apparent prevalence of TB in deer in the core area from over 4% to around 2%. Spread of TB from an infected cattle herd is rare and although TB is found in deer outside the core area it is at a significantly lower level (0.1-0.2%).

Identifying a controlling spread of TB in cattle includes annual surveillance testing of over 500 cattle herds, mandatory electronic identification statewide, tracking of all cattle movements from herds in the MAZ and one adjoining county, increased cattle surveillance in areas adjacent to the MAZ, and real-time tracking of individual animals sold at one livestock saleyard in the northern Lower Michigan Area. A large emphasis has been placed in recent years on working with cattle herds in the MAZ to eliminate the use of deer habitat for raising cattle, excluding deer from feed storage, cattle feeding and watering sites, and cattle housing and pasturing areas. USDA Wildlife Services (WS) also conducts night-time surveillance using infra-red technology to identify the behavior of deer on and round cattle farms and removes deer that have become habituated to using farms. Controlling and eliminating TB in deer includes prohibition on feeding and baiting of deer, providing no-cost permits to harvest deer year-round, programs to reimburse landowners to allow increased hunting on their properties, working to develop cooperatives to manage deer in more sustainable ways, and new efforts to identify a vaccine that could be used to increase the resistance of deer to the disease.

Since 1995, over $200 million has been spent on controlling and eradicating TB from Michigan including conducting over 30,000 whole herd TB tests and testing of almost 336,000 deer statewide. Over $2 million has been spent on infrastructure on farms such as 8-foot deer exclusion fences to protect cattle feed storage, feeding sites, and in some cases entire cattle operations to prevent spill over from deer into cattle herds. There is an important partnership between multiple state agencies, USDA, Veterinary Services (VS) and WS (also including NVSL, Agricultural Research Service [ARS], and National Wildlife Research Center [NWRC]), state and local farming and recreational groups, Michigan State University, local conservation districts and law enforcement, and many others. These partnerships have been key to the success that has been achieved so far and will continue to be into the future.

**Zoonoses Update: Michigan**

The session also included a presentation from Dr. Kim Signs, Emerging and Zoonotic Infectious Diseases Section, Bureau of Infectious Disease Prevention, Michigan Department of Health and Human Services, on Zoonotic Cases of *M. bovis* in Michigan.
COMMITTEE ON DIAGNOSTIC LABORATORY AND WORKFORCE DEVELOPMENT
Chair: Melanie Barham, ON
Vice Chair: Joseph Annelli, MD

Gary Anderson, KS; Ethan Andress, ND; Joseph Annelli, MD; Melanie Barham, ON; Susan Bright-Ponte, MD; Nancy Brown, KS; Kevin Cain, DC; Karen Conyngham, TX; Maria Cooper, IN; S. Peder Cuneo, AZ; Chase DeCoite, DC; Ron DeHaven, CA; Kim Dodd, MI; James England, ID; Allison Flinn, MD; Katie Flynn, KY; Rick Fredrickson, IL; Tam Garland, TX; Michael Gilsdorf, MD; Gail Golab, IL; Bethany Hagen, OR; Rod Hall, OK; Alex Hamberg, PA; Karyn Havas, MN; Warren Hess, IL; Ashley Hill, CA; Karl Hochstein, IA; Jesse Hostetter, GA; Noah Hull, WY; Julie Hurley, NH; Jeffrey Kaisand, IA; Elizabeth Lautner, IA; Ailam Lim, WI; Bret Marsh, IN; Grant Maxie, ON; Roxann Motroni, MD; Donal O’Toole, WY; Kristy Pabilonia, CO; Lanny Pace, MS; Elizabeth Parker, TX; Boyd Parr, SC; Allison Phibbs, DC; Keith Poulsen, WI; Valerie Ragan, VA; Shelley Rankin, NJ; Willie Reed, IN; Debbie Reed, KY; Jamie Retallick, KS; Cassidy Rist, VA; Suelee Robbe-Austerman, IA; Jennifer Rudd, VA; Susan Sanchez, GA; John Sanders, WA; Rachel Schambow, MN; Kyle Shipman, IN; Kathryn Simmons, DC; David Steffen, NE; Tyler Thacker, IA; Binu Velayudhan, GA; William Wilson, KS; Mark Wood, GA; Shuping Zhang, MO.

The Committee did not meet in person during the 2022 Annual Meeting in Minneapolis, Minnesota.
COMMITTEE ON EQUINE
Chair: Katie Flynn, KY
Vice Chair: Joe Fisch, FL

Sarah Bailey, ND; Maggie Baldwin, CO; Samantha Beaty, TN; Becky Brewer-Walker, OK; Charlie Broadus, VA; Louise Calderwood, VA; Craig Carter, KY; N Jo Chapman, MD; Duane Chappell, KY; Stephen Crawford, NH; Beate Crossley, CA; Roger Dudley, NE; Sean Eastman, SC; Dee Ellis, TX; Joe Fisch, FL; Rachael Fiske, ME; Katie Flynn, KY; Patricia Foley, IA; Tolani Francisco, NM; Tony Frazier, AL; Kaylie Fritts, NE; Margaret Gabour, MA; Robert Gerlach, AK; Michael Greenlee, WA; Kristin Haas, VT; Rod Hall, OK; Steve Halstead, MI; Hallie Hasel, WY; Andy Hawkins, KS; Carl Heckendorf, CO; Janemarie Hennebelle, GA; Terry Hensley, TX; Ashley Hill, CA; Siddra Hines, WA; Heather Hirst, DE; Brian Hoefs, MN; Jeffrey Kaisand, IA; T.R. Lansford, TX; Donald Lein, NY; Jane Lewis, CT; Mary Jane Lis, CT; Karen Lopez, DE; Margie Lyness, GA; Scott Marshall, RI; Morgan McCarty, CO; Patrick McDonough, NY; Sara McReynolds, KS; Linda Mittel, NY; Richard Mock, NC; Jason Moniz, HI; Kenton Morgan, MO; Peter Mundschenk, AZ; Lee Myers, WA; Alecia Naugle, MD; Michael Neault, SC; Cheryl Nelson, KY; Emily Nietrzeba, CA; Michael Odian, MD; Boyd Parr, SC; Elisabeth Patton, WI; Angela Pelzel-McCluskey, CO; Jeanne Rankin, MT; Grant Rezabek, OK; Jonathan Roberts, LA; Susan Rollo, TX; Nancy Ruby, OK; Ryan Scholz, OR; Andy Schwartz, TX; Kristy Shaw, OH; Michael Short, FL; Justin Smith, KS; Ben Smith, WA; Jennifer Strasser Mester, IN; Sandra Strilec, NJ; Tahnee Szymanski, MT; Manoel Tamassia, NJ; Dean Taylor, UT; Jane Teichner, FL; Beth Thompson, SD; Peter Timoney, KY; Christina Trabanco, FL; Josie Traub-Dargatz, CO; Alex Turner, CO; Charles Vail, CO; Michele Walsh, ME; James Watson, MS; Dustin Weaver, GA; Marcus Webster, GA; Nathaniel White, KY; Cliff Williamson, DC; Stephanie Wire, IL; Ryan Wolker, AZ; Melissa Yates, NC; Scarlette Zirkle Gotwals, PA.

The Committee met on October 10, 2022, from 3:15-5:19 p.m. in Minneapolis, Minnesota. There were 17 members present at the in-person meeting along with 19 guests. The meeting opened with a review of the virtual committee meetings, specifically the August 12, 2022, session titled Collaborations and Communications to Protect Equine Health and the September 15, 2022, session titled Advancing Equine Regulatory Disease Response – The Equine Herpesvirus (EHV) Model.

Committee Business
A review of the 2021 resolutions and the interim responses was conducted with decision by the members to follow up on two resolutions in 2023, specifically the resolutions related to Equine Viral Arteritis test development and tiered veterinary hospital. The chair agreed to respond to USDA suggestion of completion of the form for the request for a National Veterinary Accreditation Module for Equine Foreign Animal Diseases. Due to time restraints, a further review of the previous three year’s resolutions was tabled and the committee agreed to have a virtual review and discussion in 2023 prior to the next annual committee meeting. The meeting was adjourned at 5:19 p.m.

August 12, 2022 - Virtual Meeting
Collaborations and Communications to Protect Equine Health
Speakers for this session included Dr. Katie Flynn, Chair of the Committee on Equine; Kristin Werner, Jockey Club; Julie Broadway, American Horse Council (AHC); Keith Kleine, American Association of Equine Practitioners (AAEP); Dr. Nat White, Equine Disease Communication Center (EDCC); Dr. Stephen Schumacher, United States Equestrian Federation (USEF); and Ward Stutz American Quarter Horse Association (AQHA). The industry representative presentations covered the mission of their organization, a summary of activities of their organization regarding equine health and
welfare issues and highlights of collaboration and communication opportunities between the organization and the State Animal Health Official (SAHO).

History and Mission of the Committee on Equine

Katie Flynn, Kentucky Department of Agriculture

Dr. Flynn’s opening presentation covered the history and mission of the Committee on Equine (COE) including the transition from the Committee on Infectious Diseases of Horses to the Committee on Equine. She highlighted the accomplishments of the committee related to Equine Piroplasmosis (EP), Equine Herpesvirus (EHV), Contagious Equine Metritis (CEM) and Equine Infectious Anemia (EIA). The activities discussed included the resolutions and the implementation of the resolutions for each of the related diseases. Some of those highlights include:

Equine Piroplasmosis
- Clearance Test for T. equi (2010)
- Release Protocol for Treated and Cleared T. equi cases (2011)
- Import Testing Requirement- cELISA AND CF Test (2011)
- Western Blot for the Babesia caballi test positive cases
- Identification of EP Carriers

Equine Infectious Anemia
- Completion of an Electronic Form for EIA
- Request for an EIA Working Group (2014) discussion group formed with report in 2015
- Enhancements to the laboratory guidance document - VS Guidance Document 15201.1–Approval of Laboratories to Conduct Tests for Equine Infectious Anemia

Contagious Equine Metritis
- Resolution Requests
  - 2005 CEM Exhibition Waiver Monitoring Requirements
  - 2009 Working Group Resolution Recommendations
  - 2013 CEM PCR Research and Validation - pending
- Improvements in CEM Coordination
  - National Coordinator and Data Reporting
  - State COE Coordinator Training
  - VS Guidance Document Revision
  - CFR 2021 Proposed Regulation Changes

Additionally, Dr. Flynn provided highlights the special sessions coordinated by the Committee over the years, specifically:
- 2008 Third Conference of Experts on Equine Piroplasmosis
- 2009 First Conference of Experts on Contagious Equine Metritis
- 2013 First Conference of Experts on Equine Herpesvirus
Jockey Club Mission

Kristen Werner, Jockey Club

Ms. Kristen Werner, legal counsel for the Jockey Club, stated the mission of the Jockey Club is to maintain the Thoroughbred stud book, Advocate for the Horse (welfare, aftercare, safety), Advocate for the sport and Advocate for the business (tech/customer service). Some of the Welfare and Safety Initiatives discussed include pre-race exam, the veterinarian’s list, Equine injury database and model regulations. Past activities involving the Jockey Club include the Equine injury database (all racing breeds), uniform trainer testing, toe grab rule, racing surface test laboratory, addition of void claim and veterinarian’s list to the model rules and more recently the Horse Integrity and Safety Act (HISA).

Regarding horse welfare, the Jockey Club Registry rule states an individual cannot register horses if convicted of animal cruelty. Thus, Jockey Club requests state animal health officials (SAHOs) notify them of any cruelty cases. Over the years, the jockey club has embarked on aftercare initiatives which include Thoroughbred (TB) connect, TB aftercare alliance, TB incentive program which focuses on retraining of the off-track Thoroughbred (OTTB).

Equine Industry and the Economic Impact

Julie Broadway, American Horse Council (AHC)

Ms. Julie Broadway with the American Horse Council started her presentation with an overview of the equine industry and the economic impact. She noted 30% of U.S. households has a horse enthusiast, 1.3% own horses, 16% participate but don’t own a horse, 13% spectate but don’t own or participate. The economic impact of the equine industry is significant as $122 billion is added to U.S. economy yearly with $38 Billion in direct salaries. Of the 7.2 million horses in the U.S., 3.1 million are recreation or trail horses, 1.2 million are racehorses, 1.2 million are competition or show horses and 600,000 are traditional working horses.

Ms. Broadway further explained the mission and activities of the AHC. The mission is to protect and strengthen the U.S. equine industry thru federal legislation advocacy, involvement in federal regulatory issues, supporting industry initiatives and partnerships with industry leaders and stakeholders. The work is done through organizational structure and committees (including the Health and Regulatory and Equine Welfare Committee).

Some of the current federal legislative advocacy efforts have focused on covid relief, Federal Tax policy, labor (visa program), Equine Assisted Services (EAS), trail maintenance, hoof pastern axis (HPA) and preventing soring tactics, Horseracing Integrity and Safety Authority (HISA), Electronic Logs (DOT); Rule changes on re-entry of competition horses (USDA), Environmental Protection Agency (EPA) Proposed Rule Pyrethrin, and Environmental regulation of equine facilities (USDA/EPA). Ms. Broadway further articulated involvement in industry initiatives such as the Equine Disease Communication Center (EDCC), United Horse Coalition (identification of at-risk horses); Welfare Data Coalition specifically data from rescues/sanctuaries; Microchip Lookup – online universal tool and working to find more "horse campsites" on federal lands.
American Association of Equine Practitioners Goals
Keith Klein, American Association of Equine Practitioners (AAEP)

Mr. Keith Klein presented the goals of the AAEP to improve the health and welfare of the horse and improve professional development of its 9,000 members in 63 countries. The AAEP has an infectious disease committee ((IDC) which provides Subject Matter Expert (SME) support to the Equine Disease Communication Center (EDCC), update and develop infectious disease control and vaccine guidelines and update biosecurity resources for horse owner and the practitioner. All guidelines and disease materials can be found on the AAEP website.

The AAEP also has a Welfare and Public Policy Council who have recently been involved with addressing topics such as the Horse Racing Integrity and Safety Act, Equine neglect and abuse, Equine Euthanasia/Disposal, Scope of practice, Horse Slaughter, and Horse soring.

The AAEP Foundation arm of the AAEP provides financial support for the education of students and veterinarians and disaster relief (i.e., flood relief in Kentucky).

Recently the AAEP has convened an Equine Veterinary Sustainability Commission specifically to address the shortages of equine veterinarians. The focus of the commission is to examine the issues surrounding the failure to recruit and retain equine practitioners. More specifically looking at compensation, effective emergency coverage, practice culture, available student internships and growth and development of the veterinary student.

Equine Disease Communication Center Mission
Nat White, Equine Disease Communication Center (EDCC)

Dr. Nat White explained the mission of the EDCC which is to improve health and welfare of horses by communicating real-time alerts. The EDCC is in its eighth year and has sent out 2,672 alerts to 8,800 email subscribers and 17K followers on Facebook. They are currently updating their database to look for disease trends and updating website to have individual disease pages with resources.

Dr. White was excited to announce in 2022 the EDCC was awarded a federal cooperative agreement grant from the National Animal Disease and Preparedness and Response Program. The first ever financial award to an equine entity. The grant work plan includes a biosecurity survey being sent to veterinarians, state animal health officials (SAHOs) and owners with the goal to utilize the survey data to develop biosecurity plans based upon type of facility that is user friendly.

Dr. White encourages SAHO collaborations and communications with EDCC through timely submission to website (preferred method) of infectious diseases cases, quarantines, and identification of exposed risk in report. Dr. White requests a follow up notification to the EDCC when the quarantine is released. Dr. White welcomes any suggestions for improvements to the EDCC that would be beneficial to the SAHO.

United States Equestrian Federation Overview
Stephen Schumacher, United States Equestrian Federation (USEF)

Dr. Schumacher provided an overview of the United States Equestrian Federation which began in 1917 to regulate horse shows and now expanded to cover 29 breeds and disciplines. The USEF is a founding member of Federation Equestrian Internationale (FEI) and a member of the U.S. Olympic committee to select, train and fund the U.S. equestrian team.

Dr. Schumacher further articulated the equine health priority of the USEF with a 52-year old USEF Equine Drugs and Medications Program which enforces medication rules of 29 breeds and disciplines. The program is to ensure safety and wellbeing of horses in competition and ensure a level playing field. Over the last ten years, several rules have been enacted to protect the horse health and wellbeing, including the 12-hour rule where no horse can be injected with any substance within 12 hours of competition, the vaccine
requirements that all horses entering the show grounds have current vaccinations, the requirement for events to have a written isolation plans, the mandate that all horses that collapse are drug tested and all horses which die on a show grounds are necropsied.

To further protect the health and wellbeing of the competition horse, the USEF is exploring the potential for a microchip rule with the recommendation of a biothermal, the mandate of all horses on the grounds to be identified and an ineligibility list that can prevent exposed horses from going to the next event.

Dr. Schumacher encourages state animal health officials (SAHOs) to reach out as he would like to develop more relationships across the country to ensure collaboration on disease prevention and control.

American Quarter Horse Association Overview
Ward Stutz, American Quarter Horse Association (AQHA)

Mr. Ward Stutz presented an overview of the American Quarter Horse Association which has over 240,000 members and over six million horses registered. The mission of AQHA is to record and preserve the pedigree of the AQH and to ensure it is treated humanely, with dignity, respect, and compassion at all times.

In 2012, the AQHA started the Animal Welfare Commission which reports directly to the AQHA Executive Committee. This committee serves as AQHA’s group to develop and review primary rules and policies, programs, and procedures as it relates to welfare. Recent activities of the committee were to address conformation alteration in show horses, develop protocols for complaints of inhumane treatment at AQHA shows (specifically suspension pending a hearing); develop protocols for equine fatalities at AQHA shows (i.e., necropsy rule), recommend task force to review AQHA drugs and medication rules, and recommend microchip identification at racetracks. To further educate on animal welfare there is an online program through the American Quarter Horse University.

The AQHA also focuses on Racing Welfare though collaborations with the American Racing Commissioners International and Racing Medication Testing consortium. The AQHA supports Hair Testing and endorses out of competition testing as well as utilization of a veterinarian list and has racing integrity teams. AQHA supports sanctioned racing as well as promoting second careers for horses off track.

Mr. Stutz encourages collaborations with state animal health officials (SAHOs). AQHA can assist with SAHO on disease tracing and can distribute information to their membership related to disease related events.

September 15, 2022 - Virtual Meeting

Advancing Equine Regulatory Disease Response - The EHV Model

Brief History of EHV-1 and SAHO Efforts
Katie Flynn, Kentucky Department of Agriculture

Dr. Flynn’s presentation highlighted the regulatory history of Equine Herpesvirus-1 (EHV-1) specifically:

- 2003 Large Findlay Ohio Outbreak - Not a regulatory disease during the outbreak.
- 2008 USDA issued Emerging Disease Alert where Equine Herpes Myeloencephalopathy was noted as a potential emerging disease.
- 2010 USDA/American Horse Council hosted an industry stakeholder workshop where challenges with EHV-1 diagnostics and control were discussed.
- 2015 USAHA Committee on Equine (COE) published its first guidelines for EHM for state animal health officials (SAHOs) which was revised in 2018.
Dr. Flynn went on to highlight the risk of disease introduction and spread from an imported horse with the 2006 example of a shipment of 15 horses from Germany imported into the United States. California received one exposed horse which became clinical and was euthanized. Florida received five exposed horses resulting in 13 EHM cases which six died.

The presenter noted the documented challenges identified in 2010-2012 were:

- Lack of standard procedures/templates/checklists
- Lack of awareness of biosecurity and management
- Lack of surveillance
- Variation in sampling and testing
- Lack of uniformity in laboratories
- Inability to traceability needed in outbreak.

During the 2013 USAHA EHV-1 Workshop, their group identified a need for guidance for a regulatory response, case definitions, testing and biosecurity protocols and for standardization in rtPCR assay. Vaccine development and more research on EHV-1. A working group of the Committee on Equine was formed in 2014/15 to develop the EHM Guidance Document.

Lessons Learned From the 2011 Multi-State EHV-1 Outbreak
Josie Traub-Dargatz, Colorado State University (CSU)

Dr. Josie Traub-Dargatz presented on one of largest outbreaks of EHV-1 associated with horses attending the National Cutting Horse Association Western National Championships in Ogden, Utah (April 29-May 8, 2011). The timeline for the outbreak included:

- May 11, 2011 - first horse examined for neurological disease in Colorado,
- May 12, 2011 - second horse admitted to CSU,
- May 13, 2011 - index horse confirmed with EHV-1 had just returned from the event in Ogden, Utah where over 400 horses were,
- May 14-15, 2011 – more horses diagnosed (one was at another show in California – subsequently euthanized).

During this event, individuals were unable to be contacted as event managers did not have their contact information. Event organizers should have the owner’s address, cell phone, email and other contact information.

On May 17, 2011, the Veterinary Services (VS) Response Team developed standardized recommendations for both exposed and infected horses, developed case definitions and sent recommendations to state animal health officials (SAHOs). The USDA published weekly reports from May 19-June 23, 2011.

During this time, states, federal and industry members were increasing outreach and communications regarding the situation. National Cutting Horse Association (NCHA) cooperation was important in the response. A webinar by The Horse provided timely and accurate information with a focus on the message that biosecurity is key.

In the end, the outbreak involved 421 primary exposed horses of which there were 68 suspect/confirmed EHV-1 cases, 32 suspect/confirmed EHM cases, and ten fatalities. The primary exposed horses were in 19 states with 12 states having confirmed or suspect cases.

Those 421 horses exposed at the Ogden, Utah event were responsible for exposing an additional 1,685 secondary or tertiary exposed horses. Of those 1,685, there were 51 suspect/confirmed EHV-1 cases, 11 suspect/confirmed EHM, three fatalities. Those secondary/tertiary exposed horses were located in 14 states and the confirmed secondary/tertiary cases were located in ten states. For more details on this incident, USDA has a report on its website.
Because of this disease outbreak, almost 300 shows were cancelled. Due to the impact, the California Department of Food and Agriculture developed a Biosecurity Toolkit for Equine Events, and the Colorado Department of Agriculture developed a Business Continuity Plan for Equine Events. This outbreak was the impetus for the formation of the Equine Disease Center and the 2016 USAHA Equine Disease Forum.

2022 EHV-1 California Lessons Learned
Emily Nietrzeba, California Department of Agriculture (CDFA)
Dr. Emily Neitrzeba with the California Department of Agriculture presented lessons learned from the recent 2022 California EHV-1 Outbreaks. As background, it is important to note that in California, equine herpesvirus myeloencephalopathy (EHM) is a regulatory reportable within 48 hours and results in a mandatory quarantine. For the quarantine to be issued, there must be clinical neurologic signs with a positive polymerase chain reaction (PCR) test. However, EHV-1 or EHV-4 w/out neurologic signs is a monitored reportable condition with a voluntary quarantine.

California EHM response based off USAHA EHM Guidelines for state animal health officials (SAHOs).

From January to August 2022, California confirmed 175 EHV-1 infections with 28 confirmed EHM cases and 147 EHV-1 respiratory cases, febrile or non-symptomatic cases. Of the 28 confirmed EHM cases, 14 alive/recovering and 14 euthanized.

Mitigation Strategies implemented by CDFA included prompt isolation of febrile horses, repeat testing after onset of clinical if initial test was negative, mandatory quarantine, declaration of emergency, caution letter from State Veterinarian to postpone all equine events, and publication of Healthy Horse Venues and Best Practice Recommendations.

The incident challenges included some of the horses were international, Complex risk analysis, Gaps in understanding and compliance with biosecurity, initial shortage of supportive therapies for high number of positives, and limited referral options.

Lessons learned during the California occurrence included lengthy viral incubation period which resulted in delay in viral detection (38% negative on initial testing but with repeat testing at 48-72 hours were positive); Finding intermediate isolation space helps to determine if negative horse will be positive or not, Lack of uniform Animal Identification and real-time traceability at equine events, and inconsistent biosecurity. When it came to the show grounds there was lack of enforcement of the Official Certificate of Veterinary Inspection (OCVI)/proof of vaccine requirement, lack of biosecurity officer at venue and lack of enforcement authority by show management. Moving forward, collaboration and communication with industry is needed as well as education of stakeholders regarding EHV-1.

2022 EHV-1 Industry Response
Stephen Schumacher, United States Equestrian Federation (USEF)

Dr. Stephen Schumacher provided a brief history of USEF related to their efforts to address equine biosecurity and disease outbreaks. In 2016, USEF implemented an Equine Vaccination Rule requirement for standardization of EHV-1 and flu vaccination at event grounds. In 2017, a rule was implemented making an Isolation Plan a requirement for all show venues.

USEF convened a panel of show managers, academia, and state animal health officials (SAHOs) to review the 2022 CA EHV-1 Outbreak to discuss how to ensure healthy horses compete. Some of the new proposed 2022 biosecurity standards to be implemented this fall include measures to:

- Prevent sick horses entering grounds,
- Identify sick horses on grounds,
- Implement intermediate isolation,
- Conduct early screening of horses.
USEF would like legal authority to restrict movement but not a government body. In order to have a better idea of horses on the ground and ensure their vaccination documents are checked, the USEF is moving to an online registration and upload documents (vaccines/passport/ Official Certificate of Veterinary Inspection (OCVI)).

Additionally, USEF is pushing for microchipping for USEF competition horses (ideally, biothermal chips). In the meantime, USEF is looking to require all horses on the ground to have a USEF identification (ID) number. Lastly, USEF is looking to formalize penalties for not following biosecurity (Temp BID now required) measures.

Improved Molecular Diagnostics
Nicola Pusterla, University of California, Davis

Dr. Nicola Pusterla provided an overview of the sampling and testing for Equine Herpesvirus 1. The ideal sample set is Ethylenediaminetetraacetic acid (EDTA) blood and nasal swab (NS) which can be tested by a quantitative polymerase chain reaction (PCR). If the blood is positive, the horse is viremic and if the nasal swab is positive the horse is shedding virus from the nasal passage. For horses that test negative initial or uncertain of test result, it was recommended to retest in 24 hours.

The advantages of quantitative polymerase chain reaction (qPCR) were presented to include ability to characterize viral state, to assess contagiousness (absolute quantitation), to monitor treatment response (can look at daily viral load) and possibly make an outcome determination (300 increase in viral fold in NS and 10-fold in blood = non survivors). The qPCR can be used to assess the environment for virus.

Dr. Pusterla highlighted the identification of a third genotype detected recently. In addition to the A2254/N752 non-neuropathogenic strain and the G2254/D752 neuropathogenic strain there is a C2254/H752 strain that has been detected to cause neurologic diseases in horses.

In summary, the qPCR is the diagnostic platform of choice, although there is overall lack of standardization. Additionally, there is a need to refine molecular diagnostics for EHV_1 to characterize infection and make judicious biosecurity decisions. Most importantly, based on the new strain finding, EHV-1 qPCR should target multiple genes (universal/genotype). Lastly work is underway on development Point of Care or Stall Side testing platforms for EHV-1.

New Treatments – New Virustatics
Lutz Goehring, Gluck Equine Research Center

Dr. Goehring preferred his virustatics discussion with an overview of the pathogenesis of equine herpesvirus myeloencephalopathy (EHM) with viral replication in respiratory tract on days 1-20 and viremia on day 5-10 (fever in adult horse). The vasculitis, coagulopathy and extravasation of lymphocytes/monocytes occurs around days 5-11. The first clinical sign of a stroke occurs around day 11-12. Tissue recovery and return to normal day 7-26 weeks.

Regarding the treatment of horses, isolation and biosecurity are critical but other treatments available include: Valaciclovir, Non-steroidal anti-inflammatory drugs (NSAIDs), Dexamethasone, Heparin, Aspirin, Lidocaine constant rate infusion (CRI), Zinc, Vitamin E, and dimethylsulfoxide (DMSO). The reference regarding the various treatment modalities include: the 2022 Pusterla et al Veterinary Clinics for North America, the 2022 BEVA-EHM Therapeutics by Courouce et al and Thieulent et al, 2021 - Oral Administration of Valganciclovir Reduces Clinical Signs, Virus Shedding and Cell-Associated Viremia in Ponies Experimentally Infected with the Equid Herpesvirus-1 C2254 Variant in Pathogens 2022.

New Treatments – Amniotic Cells
Brandon Ames, Tammi Epps, AniCell Biotech

Dr. Tammi Epps and Brandon Ames from the AniCell BioTech company presented
The first application of amniotic cells for EHV-1 control was spring 2022 at Fonner Park Racetrack in Nebraska. As background, the Amnion has antimicrobial properties/very safe with studies on the human stroke patients with lesions similar to Equine herpesvirus myeloencephalopathy (EHM) were treated successfully.

The Fonner Park was a 10-day study (May 15-25, 2022) after confirmation of EHV-1 on May 11, 2022. The barn contained 112 horses (2-22 years of age) and all horses were vaccinated with either modified live virus (MLV) or killed vaccine. For each horse there was a daily quantitative polymerase chain reaction (qPCR), complete blood count (CBC)/Chem, Serum amyloid A (SAA) and virus isolation, physical examination (PE) and neurologic examination. The treatment consisted of two subcutaneous (SC) injection 3-8 days apart, lyophilized product.

Findings from this one study showed that nasal shedding to average time to negative qPCR was 2.7 days with all positive horses no longer shedding within 10 days. All negative after 10 days. Viremia had decreased incidence and duration and based on daily examination there was a decrease in neurological symptoms. There were no mortalities post administration. There was an observed more rapid resolution and return to previous level of performance. One note, non-steroidal anti-inflammatory drugs (NSAIDs) and steroids interfere with Amnion based therapy.

As far as the actions of the amnion. The immunomodulation effects include antimicrobial effect, upregulation of inflammatory response, anti-inflammatory effect and a neuroprotective effect. The regenerative effects are preventing apoptosis of neural tissue, angiogenic, provided extracellular matrix (ECM), promotes stem cells and decreased scaring. Ultimately there is a decreased healing time and improved quality of healing.

The researchers recognize the limitations of the study to include different stages of disease, no controls and use of different products, doses, intervals. However, the company looks to partner with academia, continue to collect field data and eventually pursue licensure.

Monday October 10, 2022 – In-person Meeting
USDA/SAHO Partnership in Protecting the National Equid Population

Presentations and Reports

USDA Import and Export Updates
Shanna Siegel, USDA-APHIS, Veterinary Services (VS)

Live Animal Import Updates:

- Published proposed Equine Import Rule to better align regulations with international standards and allow more flexibility for permitted imports, while continuing to mitigate the risk of bringing equine diseases into the United States. The proposed regulations also provide APHIS with more authority to enforce standards for transporting horses. The final rule is currently undergoing review and clearance.
- Updated Veterinary Services Guidance (VSG) 13424.1: Procedures for the Import of Equines into the United States and Approved Quarantine facilities.
- Developed a plan and led efforts to transition language in import animal protocols into fillable model health certifications to improve compliance and efficiency of clearance by APHIS port officials.
- Cooperated with personnel from VS (Trade, Equine Commodity, National Veterinary Services Laboratories (NVSL), Port Services), State and industry to discuss testing of sick horses in import quarantine for diseases not regulated on import and convened an internal working group to further discuss options to help manage, diagnose, and support sick horses in import quarantine.
Updated import requirements for horses from Mexico based on Mexico’s change in status to Venezuelan equine encephalitis (VEE)-affected.

- Seven days quarantine
- Vector-proofing all equine import quarantine facilities along the U.S. Mexico border (U.S. and Mexican sides)
- VS imported ~30,000 horses over the past year, the highest number on record.

Live Animal Export Updates:
- Live Animal Export History Page = >300 Live Animal Export Updates
  - 3,500 Gov delivery subscribers
- International Regulations (IREG’s) website = Updated and reformatted over 159 countries pages
- Veterinary Export Health Certification System (VEHCS) = Electronic issuance and submission of all live animal export HC by USDA Accredited Veterinarians; system updates to increase efficiency and ease of use continue
- Gained Export Market Access: New (Opened) Markets = 17 markets; Expanded Markets = 25 Markets; Retained Markets = 21 markets; Re-opened Markets = 5 Markets

Recognized Areas of Concern for Domestic Equine Health
Stephanie Brault, USDA-APHIS, Veterinary Services (VS)

Equine Infectious Anemia Virus (EIAV)

EIAV is a lifelong retroviral disease of horses transmitted naturally on the mouthparts of large biting insects, especially biting flies in the family Tabanidae, such as horse flies and deer flies. Historically, immense progress has been made in the reduction of EIAV infections in equines in the United States. EIAV testing requirements to identify and remove reactors have played a large role in these reductions, as well as efforts to identify and screen undertested and untested equine populations. States play an important role in the control of EIA by determining EIAV testing requirements, such as for entry into the State and change of ownership, while the federal government approves EIAV testing laboratories and restricts movement of EIAV reactors. In 1972, when testing was initiated in the United States, nearly 4% of samples were positive; this was reduced to less than 0.005% in 2015 and has plateaued around that level. In the mid-1990s, 92% of test-positive samples were from equines in what was referred to as the “hot zone”, comprising southern and some midwestern States. Risk of EIAV infection was highest in this region in part because of environmental conditions ideal for insect vectors that transmitted the virus and also because a reservoir of untested horses infected with EIAV were presumed to exist in these areas. Since that time, the geographical range of EIAV has become less predictable, with clusters of EIAV-infected horses being found on individual premises outside of the historical hot zone. This is a result of an epidemiological shift away from natural insect transmission to increasing iatrogenic transmission of EIAV through unhygienic practices by horse trainers and owners, particularly in unsanctioned Quarter Horse racing. These practices include re-use of needles, syringes, and intravenous (IV) sets; administration of blood transfusions from untested donor horses; use of unapproved, illegal blood products from other countries; and infectious blood contamination of multi-dose drug vials. As of 2017, the majority of EIA cases each year are now being found in Quarter Horse racehorses with iatrogenic transmission involved, many also
involving illegal importation of animals from Mexico. As the epidemiology of the disease has changed, States have assisted in the identification of new infections by instituting requirements for testing of horses in both sanctioned and unsanctioned horse racing.

**Equine Piroplasmosis (EP)**

EP is a blood-borne disease naturally spread by ticks and caused by two protozoal parasites, *Babesia caballi* and *Theileria* (formerly Babesia) *equi*. EP is epidemiologically similar to EIA in that it is naturally transmitted by vectors (ticks) but can also be iatrogenically transmitted by contaminated equipment and blood products. The story of EP mitigation in the United States is a great illustration of cooperation between federal and State partners to control animal disease. Prior to outbreaks identified in 2008 and 2009 in Florida, Missouri, Kansas, and Texas, the most recent cases of EP on the U.S. mainland had occurred in Florida in the 1970s. Epidemiological investigations of the Florida and Missouri/Kansas outbreaks determined that transmission was by iatrogenic means, while the Texas outbreak was found to involve natural transmission by ticks. These outbreaks presented unique problems that required novel solutions. The Texas outbreak in particular required creative, flexible management to both eradicate the disease from the infected animals on the affected premises and trace-outs and break the tick transmission cycle. Given the economic and genetic value, and number of horses involved in the Texas outbreak, development of an effective control and eradication strategy that did not involve solely euthanasia was imperative. Therefore, a chemotherapeutic approach for elimination of EP in naturally infected horses with a high-dose imidocarb dipropionate protocol was developed through collaboration among USDA, academia, and state animal health officials (SAHOs), which was published in 2012 and is still in use today as the USDA-APHIS EP Treatment Program. As of October 2022, 172 horses, not including the original 163 treated Texas outbreak horses, had been cleared of disease and released from quarantine. Similar to recent EIA epidemiology, the 2008/2009 EP outbreaks in Florida and Missouri/Kansas were determined to be associated with illegal importation of infected horses from Mexico and iatrogenic transmission among horses involved in unsanctioned Quarter Horse racing. In response to these detections, active surveillance for EP was dramatically increased in the U.S. as States instituted risk-based EP testing at the National Veterinary Services Laboratory (NVSL) for movement and to enter sanctioned racetracks. Domestic testing for EP rose from essentially nil in 2008 to almost 80,000 tests in 2010. Almost 500,000 horses in the U.S., not including the Texas outbreak horses, have been tested since the 2008 detections, uncovering a total of 562 EP-positive horses. The majority (89%) of these horses were Quarter Horse racehorses, again emphasizing the importance of focusing testing on populations of horses involved in sanctioned and unsanctioned Quarter Horse racing and potential epidemiological links to these horses. However, we are also recognizing the importance of the risk of untested, infected horses illegally imported from Mexico in carrying EP into the U.S. This type of horse has been an index case in a number of clusters identified in the last decade. Furthermore, these illegally imported EP-positive horses have been found, in an increasing number of cases, to be of Spanish and warmblood breeds used for purposes other than horse racing, such as show jumpers/hunters, dressage horses, or charro horses. This highlights the importance of widening the net of EP testing and finding ways to expand into untested but high-risk populations in order to detect hidden pockets of positive horses. In many cases, horses infected with EP are also infected with EIA due to similar high-risk practices that transmit these diseases, and it is important to test horses found positive for one disease for the other disease.

**Vesicular Stomatitis Virus (VSV)**

The biggest news about VSV as of October 2022 is that we have not had a VSV case in the United States since 2020! Continued vigilance by horse owners, veterinarians,
and regulatory officials is needed and widespread routine surveillance for the disease is ongoing. VSV is caused by a rhabdovirus; its epidemiology is incompletely understood, but transmission is thought to occur mainly through biting insects such as black flies, sand flies, and Culicoides biting midges, as well as through direct contact with virus-containing fluids such as saliva or indirect contact with fomites. VSV circulates endemically in northern South America, Central America, and southern Mexico, occasionally causing outbreaks in the U.S. Outbreaks usually occur during the warmer months, often along waterways. The 2019 incursion of VSV was the largest in 40 years, lasting from June to December 2019 with 1,144 VS-affected premises in eight States (Colorado, Kansas, Nebraska, New Mexico, Oklahoma, Texas, Utah, and Wyoming). Subsequent overwintering of the virus led to continuation of the outbreak from April through October 2020 with 326 affected premises identified in eight states (Arizona, Arkansas, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, and Texas). A more complete accounting of the 2019 and 2020 outbreaks was published in Pathogens in 2021 and can be accessed online at https://www.mdpi.com/2076-0817/10/8/993. While VSV is not typically a serious disease for the individual affected animal, outbreaks cause significant trade disruptions and economic impacts because of quarantine of affected premises and prevention of local animal movements, cessation of international and interstate movement of livestock, and reduced participation in and cancellation of livestock shows and events. Quarantine periods of affected premises can be lengthy if the disease continues to spread within the premises, since premises with affected animals are quarantined until 14 days after lesions appear on the last case at that location. Of course, one of the more important features of VSV is that it is clinically indistinguishable from foot and mouth disease (FMD) in cattle and swine; therefore, immediate reporting to State and federal animal health officials of VSV-like lesions is required to first rule out FMD infection. VSV is also a zoonosis that can be transmitted to humans through direct contact with lesions on livestock, causing typically self-limiting fever, headache, fatigue, and myalgia.

Alphaviruses

Western equine encephalitis (WEE) is a zoonotic, mosquito-borne disease caused by an alphavirus, once responsible for numerous epizootics and epidemics of encephalitis in horses and humans respectively in the western States. There have not been human or equine cases of WEE identified in the U.S. since the late 1990s, and the last identification of WEEV in its enzootic cycle was in a positive mosquito pool in 2013 in Clark County, Nevada. Eastern equine encephalitis (EEE), a closely related alphavirus, on the other hand, is quite active in the United States. 2019 was a particularly noteworthy year for EEE, with record-breaking numbers of human cases identified (38 cases in ten States with 15 fatalities) and a relatively high number of horses as well (184 cases from 24 States). It was noted in 2019 and 2020 that the number of EEE cases in equids were twice that of West Nile virus (WNV) in equids, a reversal of typical case ratios. EEE has also been observed in an expanding geographic range in the U.S. Of note, two cases were identified (only one of which was confirmed diagnostically) in horses residing in North Dakota on a ranch that crossed the border with Montana in 2020, which is the westernmost locally acquired cases that have been documented in humans or horses.

The potential for incursion of epizootic strains of Venezuelan equine encephalitis (VEE) in the U.S. from the south continues to be a concern. VEE virus is another zoonotic alphavirus that infects humans and horses, last identified in the U.S. in the early 1970s. However, epizootic subtype viruses periodically emerge in Mexico, Central America, and South America. There are at least six VEE antigenic subtypes (I-VI), and subtype I has five antigenic variants (IAB-IF). Subtype IAB and IC viruses are associated with epidemic and epizootic disease, while IE viruses are associated with smaller-scale epizootics in horses. The remaining VEE subtypes are enzootic and not associated with disease in equids. Equids serve as amplification hosts for IAB and IC epizootic strains of VEE virus and are
therefore an important part of the transmission cycle and not considered dead-end hosts. In response to increased awareness of the circulation of VEE virus in Mexico, the United States instituted a 7-day quarantine requirement for horses imported into the U.S. from Mexico in July of 2021. This was followed in early 2022 by a requirement for testing for VEE in any horses from VEE-affected countries in quarantine that developed signs of illness, including fever, and with the requirement for all equine import quarantine facilities quarantining horses from Mexico be vector-proofed by December 31, 2022.

**Equine Herpesvirus – 1**

Sporadic outbreaks of equine herpesvirus -1 (EHV-1) associated myeloencephalopathy (EHM) continue to occur around the country and globally. There have been several high-profile EHM outbreaks in horses recently in the United States, and an outbreak associated with an international jumping competition in Valencia, Spain, in 2021 was world news, with accounts appearing outside of equestrian-only communications and spilling over into general media. EHV-1 is a relatively common cause of respiratory disease in horses and is widespread in horse populations. Rarely, infection leads to abortion or neurologic disease, sometimes resulting in devastating outbreaks affecting events and large boarding facilities. Prevention of EHM outbreaks are challenging due to the potential of latent EHV-1 infection and silent, non-clinical circulation in horse populations, and the fact that currently available vaccines do not protect against neurologic disease. EHM is a reportable disease in many States, and animal health officials are often called upon to manage outbreaks of disease. Guidelines for SAHOs for the management of EHM incidents were developed in a joint EHV-1 workshop first convened in 2013 and were revised in 2018. These guidelines will be discussed in the next section.

**Foreign Animal Disease Incursions**

There is a long list of foreign animal diseases and exotic vectors about which we are concerned. Here are a few highlights:

**African Horse Sickness (AHS)**

AHS, caused by the orbivirus African horse sickness virus (AHSV), is endemic primarily in Africa, with outbreaks previously reported in Egypt, parts of the Middle East, Spain, Portugal, Morocco, Pakistan, and India. AHS was recently introduced into Thailand and Malaysia in 2020, and, as of October 2022, these countries are still considered to be AHS-affected by the World Organization for Animal Health (WOAH). *Culicoides imicola*, a biting midge found in sub-Saharan Africa, southeast Asia, Europe, Greece, Italy, Portugal, Spain, and Mediterranean islands such as Sardinia and Sicily, is recognized as the primary vector of AHS. Global geographic models have predicted potential habitat suitability for range expansion of *C. imicola* into the United States. The U.S. is already home to *C. sonorensis*, which is a capable vector of both bluetongue virus and epizootic hemorrhagic disease virus, other orbiviruses related to AHSV. Experimentally, susceptibility of *C. sonorensis* to AHSV infection has been shown but its true vector capacity is not known. However, concerning potential scenarios of introduction of AHSV into the United States, and establishment of infection in native or introduced *Culicoides* species exist and must be prevented to protect horses in the U.S.

**Japanese Encephalitis Virus (JEV)**

JEV is a flavivirus related to dengue, yellow fever, and WNV and spread by mosquitoes. It is a leading cause of human viral encephalitis in many countries of Asia. The virus also causes fever, jaundice, and encephalitis in horses and reproductive losses in swine. In Australia, JEV had previously only been reported in the most northern reaches of Queensland and islands of the Torres Strait between Queensland and Papua.
New Guinea. In 2022, the number of cases of JEV across Australia has increased dramatically, with human, swine, and equine cases identified across Victoria, New South Wales, Queensland, and South Australia. There have been at least 26 probable JEV cases identified in horses from New South Wales, Australia, in 2022. JEV is typically transmitted by *Culex* spp. Mosquitoes. Given the ease with which the related flavivirus WNV established transmission in *Culex* spp. Mosquitoes in North America when it was introduced in 1999, this is a virus worth watching. Similar to WNV, horses are dead-end hosts of JEV and are not known to transmit the virus to other horses, animals, or people.

**Venezuelan Equine Encephalitis (VEE)**

As previously mentioned, VEE is endemic in South America, Central America, and Mexico and poses a constant threat of incursion from the south.

**Asian longhorned ticks and Red sheep ticks**

Two exotic Ixodid ticks in the *Haemaphysalis* genus have been recently identified in the United States. Asian longhorned ticks (*H. longicornis*) were identified in the U.S. for the first time in New Jersey in 2017 and are thought to have arrived in or before 2010. Asian longhorned ticks have since been found in 17 States ranging from New York to Georgia to Missouri. Red sheep ticks (*H. punctata*) were reported in 2021 from tick samples collected between 2010 and 2020 in Rhode Island. Further detections of red sheep ticks in the U.S. have not been reported. Both ticks could potentially be competent vectors for equine piroplasmosis in the U.S. An experimental study indicates that *H. longicornis* is not competent to transmit *Anaplasma phagocytophilum*, the agent of equine granulocytic anaplasmosis.

**Diseases Transmitted by Breeding**

**Contagious Equine Metritis (CEM)**

CEM is a venereal disease of horses caused by the bacterium *Taylorella equigenitalis* that is chronically carried without clinical signs by stallions, and occasionally carrier mares, and can result in infertility in mares. Since *T. equigenitalis* was first identified in the United States in the late 1970s, there have been multiple known incidents of occurrence of CEM outside of quarantine facilities in 1982, 2006, 2008-2010, 2010, 2011, and two incidents in 2013. The 2008-2010 outbreak was the largest CEM outbreak in the history of the U.S., involving the investigation of over 1000 horses located in 48 States, revealing *T. equigenitalis* infections in 28 horses (23 stallions and 5 chronic carrier mares). Epidemiologic analysis revealed that all of the positive horses were linked to a single common source, most likely a Fjord stallion imported into the U.S. in 2000. The U.S. continues to have stringent requirements for the permanent entry of breeding horses into the U.S. and is the only country in the world that requires test breeding of imported horses. However, when the U.S. relies on the CEM-free status of other countries and does not require its own testing, this is a potential entry point for infected animals. For example, the 2010 occurrence of CEM mentioned above was a single infected Arabian stallion in California that was imported into the U.S. from the United Arab Emirates. He was not required to go through post-entry CEM quarantine in the U.S. because of the United Arab Emirates’ (UAE) CEM free status where he had been residing for the minimum required 12 months, but he had spent the previous years before his arrival in UAE as a breeding stallion in a CEM-affected country in Europe.

**Equine Viral Arteritis (EVA)**

EVA is a disease in horses caused by the equine arteritis virus (EAV) that can cause both respiratory-related clinical signs and abortion and is spread by both the respiratory and venereal route. Stallions can become long term carriers of the virus and shed the virus in semen. Carrier stallions should be bred only to EVA-seropositive or vaccinated mares, and EVA-negative colts should be vaccinated prior to puberty. The United States is currently
the only major horse-breeding country in the world without an import control policy for EVA. Cases of EVA in the U.S. occur sporadically but may be underreported. In 2006, a multi-state occurrence of EVA affecting hundreds of horses that originated on a large Quarter Horse breeding farm in New Mexico was reported. All four of the stallions standing on the farm became carriers and semen shedders of EAV through an unknown exposure, resulting in exposure to horses on premises in 19 States receiving shipped semen from these stallions or when mares visited the farm for breeding and then returned home.

Transport of Horses to Slaughter

The Commercial Transport of Equines to Slaughter Act (CTESA) in 9 CFR Part 88 regulates equines being commercially transported to slaughter and seeks to ensure their humane handling. Current and long-standing Congressional appropriations restrictions specifically prohibit the expenditure of federal funds to inspect equines for slaughter. These appropriations restrictions, along with several State and local ordinances, effectively have eliminated the operation of equine slaughter plants in the U.S. since 2007. However, thousands of horses are still exported to Canada and Mexico for the purposes of slaughter annually. These horses must be moved in compliance with CTESA regulations, and while VS does not actively inspect equines being transported for slaughter per appropriations restrictions, it does respond to complaints involving welfare violations in transport. Complaints are directed to the Area Veterinarian in Charge (AVIC), who takes local action and/or refers to USDA-APHIS Investigative and Enforcement Services (IES) as appropriate. The Equine Health Team is working to develop outreach and education materials about horse slaughter to help communicate to the public about this difficult topic and also improve interagency cooperation.

Collaborative Progress Made in Domestic Equine Health EIA and EP

USDA and SAHOs continue to improve in cooperation to identify new cases of EIA and EP and trace out and find other affected horses. SAHOs and USDA have worked together to improve awareness of the risk for EIA and EP infection in horses involved in unsanctioned racing. Adjusting to the changing epidemiology of EIA and EP, States and the APHIS-VS Equine Health Team have broken new ground in the use of social media investigation to identify at-risk horses participating in unsanctioned racing. This information is used to identify potentially untested populations and also for trace out of horses affected by known infections. Social media investigation has been used to identify at least 96 bushtracks spread across the country in 27 States. SAHOs have contributed to the detection of hidden cases of EIA and EP by continuing to enforce current EIA testing requirements and instituting new requirements for EP testing for at-risk horses, such as for horses in unsanctioned and sanctioned racing.

African Horse Sickness (AHS)

The potential risks of AHS have spurred much discussion among industry, academia, State officials, and APHIS about preparedness measures. Accomplishments include the creation of an educational information sheet and APHIS AHS webpage that were released in 2021. The APHIS Center for Epidemiology and Animal Health (CEAH) has performed a Transboundary Pathways Assessment of AHS that is currently in final clearance and will be released soon. An APHIS AHS Response Strategies document is currently under development. The APHIS training for foreign animal disease diagnosticians (FADDs) includes AHS, and an AHS field exercise for FADDs simulating an AHS scenario and sample collection has been created.

Vesicular Stomatitis Virus (VSV)

Several changes have been made in the last several years to the VSV response
measures in order to streamline the procedures for regulatory personnel and increase cooperation of horse owners. First, the quarantine period for premises with suspect or confirmed VSV cases was reduced from 21 days after lesions were determined to be healed to 14 days from the onset of lesions in the last affected animal on the premises. While quarantines of individual premises can still be lengthy, the reduction more closely aligns with the science of how long virus can actually be isolated from ruptured lesions and has helped to improve acceptance of the quarantine period for horse owners. After diagnostic confirmation of the first VSV case in a county, equids with suspected lesions on subsequent premises in that county are not required to be tested in order to establish VSV infection but can instead be classified as suspect cases and still quarantined appropriately. Finally, accredited veterinarians may be used to collect samples and monitor premises with suspected equine VSV cases at the discretion of the SAHO after the index case in a State is confirmed or in situations where limited State/federal resources are available. FADDs will still be dispatched on all suspect cases involving ruminants or swine with lesions due to the importance of ruling out FMD in these cases.

Including researchers from USDA-ARS, USDA-APHIS, and various universities, the collaborative, multidisciplinary VSV Grand Challenge project continues to make progress evaluating the interactions of climatic, ecological, hydrological, virus, vector, host, and epidemiological factors in VSV incursion and spread. Ultimately, the goal is to predict the size and scope of future VSV outbreaks and potentially expand the data set, models, and methods to other arboviral diseases.

More Arboviruses

An exciting development for cooperation between APHIS and SAHOs for equine arboviral disease reporting is the development of the APHIS Equine Arboviral Dashboard. Dashboard information comes directly from the Centers for Disease Control and Prevention (CDC) ArboNET and updates biweekly to the APHIS dashboard. This dashboard allows State partners to monitor national trends and review their State’s equine West Nile Virus and Eastern Equine Encephalitis cases as reported to CDC’s ArboNET, to allow timely correction of any case discrepancies.

Equine Herpesvirus Myeloencephalopathy (EHM)

The EHM Incident Guidelines for SAHOs document collaboratively developed by USAHA has been an invaluable source of information for people tasked with managing EHM outbreaks. The guidelines provide case definitions, quarantine, biosecurity, and testing strategies, EHV-1 investigation guidelines, and communication recommendations, and emphasize the importance of pre-planning and pre-designation of quarantine areas for equine events. SAHOs have been able to use this resource to not only implement a minimum standard of response across the country, but also to innovate and flexibly manage outbreaks of EHM in their States.

Equine Disease Communication Center (EDCC)

This centralized hub of equine health information was launched in January 2015 as a collaborative effort among the American Association of Equine Practitioners (AAEP), the American Horse Council (AHC), USDA, and State animal health officials (SAHOs). The site is a notification center for disease outbreaks and provides other important resources such as a comprehensive list of equine infectious diseases, biosecurity recommendations, vaccine guidelines, the National Equine Health Plan (NEHP), and contact information for state veterinary offices. Earlier this year, the EDCC was awarded a cooperative agreement from the USDA-APHIS National Animal Disease Preparedness and Response Program (NADPRP) to increase awareness of biosecurity and help prevent the spread of infectious diseases in horses. A NADPRP grant had not been previously awarded for an equine-focused project.
Future Directions

The importance of maintaining vigilance in monitoring for infectious disease in horses and also planning ahead for future threats cannot be overemphasized. Promoting education about the changing epidemiology of EIA and EP will be critical to our ability to continue to effectively combat these diseases in the future. Quick recognition of the incursion of foreign animal diseases such as AHS, JEV, and VSV into the U.S. is critical to their control and the maintenance of the United States’ status as free of these diseases. This is only possible if all stakeholders are aware of the clinical appearance of these diseases and how to communicate their detection. Venereal diseases such as CEM and EVA could potentially be under recognized and continued education of stakeholders, particularly those involved in the breeding industry, about these diseases is required. The establishment of voluntary certification programs for breeding stallions may be a good tool for promoting awareness of diseases transmitted by breeding and the detection of potentially infected stallions. Finally, while the EHM Guidelines developed by the USAHA and updated in 2018 have been serving those tasked with managing EHM outbreaks well, a review and update should be considered.
COMMITTEE ON FARMED CERVIDAE
Chair: Charly Seale, TX
Vice Chair: Shelly Chavis, IN

Carissa Allen, MN; Erika Alt, WV; Gary Anderson, KS; Paul Anderson, WI; Charlie Bahnsen, ND; Kerry Barling, KY; Nancy Barr, MI; Tom Bragg, NE; Kevin Brightbill, PA; Beth Carlson, ND; Christine Casey, KY; Shelly Chavis, IN; Sarah Cobum, AK; Tim Condict, OK; Walter Cook, TX; Maria Cooper, IN; Donald Davis, TX; Kim Dodd, MI; Roger Dudley, NE; Dee Ellis, TX; Jessica Emerson, FL; Heather Margaret Fenton, NT; John Fischer, GA; Katie Flynn, KY; Kaylie Fritts, NE; Tam Garland, TX; Robert Gerlach, AK; Colin Gillin, OR; Linda Glaser, MN; Michael Greenlee, WA; Tracie Guy, FL; Rod Hall, OK; Catherine Harris, NC; Tricia Hebdon, ID; Janemarie Hennebelle, GA; Terry Hensley, TX; Warren Hess, IL; Clayton Hilton, TX; Carolyn Hurwitz, ME; Beth Johnson, KY; Anne Justice-Allen, AZ; Jeffrey Kaisand, IA; Diane Kitchen, FL; Patrice Klein, DC; Terry Klick, OH; Darlene Konkle, WI; R. Scott Larsen, CO; Scott Leibsle, ID; Jane Lewis, CT; Ailam Lim, WI; Rick Linscott, ME; Eric Liska, MT; Mitch Lockwood, TX; Linda Logan, TX; Karen Lopez, DE; Roxanne Lotts, WI; Aaron Loucks, NC; Travis Lowe, MN; Mark Luedtke, MN; Bret Marsh, IN; James Maxwell, WV; Patrick McDonough, NY; Andrea Mikolon, CA; Mendel Miller, SD; Roxann Motroni, MD; Randy Munger, CO; Alecia Naugle, MD; Michael Neault, SC; Danielle Nelson, WA; Cheryl Nelson, KY; Tracy Nichols, CO; Dustin Oedekoven, SD; Gary Olson, MN; Kathleen Orloski, NE; Mitchell Palmer, IA; Elisabeth Patton, WI; Bill Pittenger, MO; Jenny Powers, CO; Amanda Price, UT; Hunter Reed, TX; Sarah Reinkemeyer, MO; Suelee Robbe-Austerman, IA; Jonathan Roberts, LA; Susan Rollo, TX; Mark Ruder, GA; Sherri Russell, MO; Shawn Schafer, OH; David Schmitt, IA; David Schneider, WA; Brant Schumaker, WY; Andy Schwartz, TX; Charly Seale, TX; Laurie Seale, WI; Daryl Simon, MN; Staci Slager, IL; Justin Smith, KS; Dennis Summers, OH; Diane Sund, MD; Tahnee Szymanski, MT; Dean Taylor, ; Dean Taylor, UT; Tyler Thacker, IA; Tyler Thacker, IA; Beth Thompson, SD; Tracy Tomascik, TX; Scott Wells, MN; William Wilson, KS; Nola Wineland, MI; Richard Winters, Jr., TX; Peregrine Wolff, CA; Alan Young, SD; Cristopher Young, CO; Glen Zebarth, MN.

The Committee met on Monday, October 10, 2022, from 1:00-3:10 p.m. There were 102 participants attending in-person along with virtual attendees. Charly Seale started the meeting by introducing himself and his Vice Chair, Dr. Shelly Chavis, who was participating virtually, between the first and second presenter. He prompted members/attendees to sign the roster. He also reminded the audience that anyone can participate but only members can bring forth resolutions, motions, and vote. Next, he read the Committee on Farmed Cervidae Mission Statement that was revised and approved last year.

The purpose of the Committee on Farmed Cervidae is:

• To represent the interests of farmed Cervidae as related to animal health.

• To assist in the development of sound policies and regulations governing farmed Cervidae based on scientifically valid principles and methods.

• To provide information and expertise so appropriate decisions can be made regarding the health of domestic livestock and wildlife that also consider the needs of farmed Cervidae.

• To provide information and assist in the development of sound policies governing the intrastate, interstate, and international movement of farmed Cervidae, their germ plasm and other biomaterials.

• To assist in the identification, management and educational outreach associated with disease and welfare issues affecting farmed Cervidae.

• To encourage and support research and development to maintain the health and welfare of farmed Cervidae.
Presentations and Reports

2022 USAHA Cervid Section Summary USDA-APHIS-VS Cervid Health Program

Tracy Nichols, USDA-Animal and Plant Health Inspection Service (APHIS)

FY2022 CWD Detections in Farmed Cervids: There were 23 new chronic wasting disease (CWD) positive farmed cervid herds in FY22 (18 white-tailed deer, 3 elk, 2 mixed species herds). Fifteen of the herds were not participants in the Federal Herd Certification Program (HCP), two were enrolled, but not certified in the HCP, and six were certified in the HCP. Nineteen of the 23 newly identified herds were in areas where CWD has been found within 20 miles in wild cervid populations.

CWD Research: APHIS, Veterinary Services (VS) continues to partner with a variety of CWD researchers such as Dr. Chris Seabury from Texas A&M to investigate and expand CWD predictive genetics in white-tailed deer. The data from this study continues to provide useful information. In FY22, three states were funded with CWD Cooperative agreements to utilize a predictive genetics approach to assist producers in establishing their breeding values. VS has also funded Dr. Seabury, via a cooperative agreement with the Texas Animal Health Commission, to develop a predictive genetics approach in elk. Collaboration with USDA Agricultural Research Service (ARS) Pullman and Ames, United States Geological Survey (USGS), University of Wisconsin, Madison, and University of Minnesota, has determined the sensitivity and specificity of real-time quaking-induced conversion (RT-QuIC) in tonsil biopsy and postmortem medial retropharyngeal lymph nodes. A cross laboratory reproducibility study has been conducted and a data package is being prepared to be submitted to the USDA National Veterinary Services Laboratories (NVSL) for review. A blinded postmortem RT-QuIC sensitivity and specificity study has been completed on medial retropharyngeal lymph nodes and the bioassay portion will be starting soon.

Tuberculosis (TB) and Brucellosis: The brucellosis and TB rules are still under development at this time. A total of 9,178 TB tests were conducted in FY21 (7,595 DPP and 1,583 SCT).

Discussion of Proximity Barriers/ Restrictions in Determining Importation of Herd Certification Programs (HCP) Herds

Scott Leibsle, Idaho State Department of Agriculture

The variability of import requirements for domestic cervids relative to chronic wasting disease (CWD) spans a wide regulatory spectrum. The genesis of these regulations is typically unique to each state and are a product of rules negotiation of policy and politics, absent of scientific evidence. The wide variability of these regulations is both difficult for state animal health officials to enforce and an onerous burden upon the industries that are subject to them. The CWD import regulatory spectrum spans from HCP compliance (minimum), endemic area restrictions, proximities to CWD positive wild cervids, restriction from affected states or provinces or a total import moratorium (maximum). Efforts to harmonize import requirements for CWD as well as other entry criteria that are based upon appropriate scientific evidence should be maximized to ease both regulatory burdens and impacts upon commerce and trade.

Chronic Wasting Disease (CWD) Program Standards – Time for a New Look and Need for a Rewrite

Paul Anderson, Minnesota Board of Animal Health

Dr. Anderson spoke about the need to change how we control CWD in the United States and the need to rewrite the CWD Program Standards. He provided content for how our understanding of the disease and its distribution has changed. He discussed, from a producer perspective, why the CWD Program Standards should be rewritten. Dr. Anderson
presented a draft rewrite of the CWD Program Standards that supports the requirements specified in 9 CFR 55 and 81 and outlines a program to control CWD in farmed cervid herds without causing unnecessary harm to cervid producers.

Committee Business:

Travis Lowe, from the North American Elk Breeders Association, read his resolution requesting USAHA to urge state animal health officials and/or state wildlife officials that govern state import requirements of farmed cervidae to use proximity restrictions based off known peer reviewed science that specifically caters to applicable species.

Mark Luedtke made a motion to approve the resolution and Gary Olson seconded the motion. Discussion on the resolution ensued.

A motion was made by Hunter Reed, seconded by Paul Anderson, to amend the resolution to change the last sentence to say, “based off known best available science that can be made publicly available”.

After discussion, Charly Seale called for a show of hands for and then against the amendment. The motion to amend the resolution passed.

Back to the motion to approve, Charly Seale called for a vote on the resolution and by a show of hands the resolution was approved.

Proposed Recommendation

Charly Seale reviewed the recommendation, drafted by Dr. Paul Anderson, stating the USAHA Committee on Farmed Cervidae recommends to the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) that the document entitled, *Chronic Wasting Disease Program Standards* be completely rewritten and replaced with the document entitled, *Chronic Wasting Disease (CWD) Industry/State/Federal Program Standards* (visit [https://www.usaha.org/farmed-cervidae](https://www.usaha.org/farmed-cervidae)).

A motion was made by Mark Luedtke to approve the recommendation. The motion was seconded by Jacques DeMoss.

A motion was made by Scott Leibsle, seconded by Paul Anderson, to amend the recommendation so that the revised CWD Program Standards serve as a template or reference/starting point for USDA to re-write the Program Standards. There was discussion that suggested the program needs to be modified to reflect current understandings of Chronic Wasting Disease but too many people were left out of the revision process. The overwhelmingly highly pathogenic avian influenza (HPAI) response was discussed as a reason why USDA did not have time to work on the 2021 Resolution #3, requesting a revision of the Chronic Wasting Disease Program Standards. Charly Seale called for a show of hands to vote on the amendment. The motion to amend failed.

Next, Charly Seale called for a vote on approving the recommendation to replace the current CWD Program Standards with the industry revision. The vote to approve the recommendation failed.

The meeting was adjourned at 3:10 p.m.
The Committee met on Monday, October 10, 2022, at 3:00 p.m. in Minneapolis, Minnesota. There were ten members, and 21 guests present in person.

Presentations and Reports

**CDC: National Veterinary Accreditation Program (NVAP)**

**Preharvest Food Safety Module for Veterinarians**

*Marta Zlotnick*, Centers for Disease Control and Prevention (CDC)

Dr. Zlotnick introduced the new module for the National Veterinary Accreditation Module on Preharvest Food Safety. The NVAP through USDA-APHIS is a process that trains veterinarians in aspects of disease control and allows them to perform tasks to prevent disease spread. The module is supported by a number of working groups in government and industry and deals with pre-harvest microbial contamination issues affecting meat, dairy, poultry, and egg products. The specific objectives are to recognize preharvest practices that impact food safety, understand detection, investigation, and tracing of foodborne contaminants, and model preharvest food safety practices. The module includes videos of collaborating experts explaining the role of veterinarians in food safety. The module is expected to go live next year.

**VetLIRN Update**

*Gregory Tyson*, Food and Drug Administration (FDA)

Dr. Tyson gave a primer on the Veterinary Laboratory Response Network (VetLIRN) and an update on current projects. VetLIRN is a collaborative network of veterinary diagnostic laboratories in the United States and Canada that support the FDA Center for Veterinary Medicine (CVM) mission of protecting human and animal health. The network has been involved in eight pet food recalls over the past year, including six associated with *Salmonella* spp. It has been involved in health risks in companion animals associated with alkaline water products, Salmonellosis associated with bearded dragons, and the
impact of a peanut butter recall on companion animals. VetLIRN has instituted numerous laboratory proficiency tests focused on analytical chemistry and microbiology, has set up Blind Method Tests for laboratories developing new tests, and has collaborated with NVSL on AMR and Salmonella serotyping projects. VetLIRN has provided grants for projects involving WGS, analytical methods, education, and COVID assays.

**Detection of Senecavirus A in Pigs from a Historically Negative National Swine Herd Associated with Feed Imports from Endemically Infected Countries**  
**Scott Dee**, Pipestone Research

Dr. Dee and his collaborators have recently published this investigation of an outbreak of vesicular disease in a naive swine herd in the United States. The differential diagnoses included foot and mouth disease virus (FMDV) and Senecavirus (SVA). SVA was SVA. Samples were collected from feed ingredients and surfaces on the farm and compared via polymerase chain reaction (PCR) using vesicular fluid as a positive control. Forty percent of the soybean meal samples tested, and one tote bag tested, were positive for SVA, all other samples were negative. This investigation has proven that viral diseases can be transmitted via feed, and soybean meal (SBM) in particular. This has significant implications, because SBM is imported into the U.S. from 23 countries that have endemic African Swine Fever Virus (ASFV). Canada, Australia, Denmark, and the U.S. have set up or are in the process of starting national feed biosecurity programs.

**Public Policy and Food Security**  
**Beth Sabin**, American Veterinary Medical Association (AVMA)

Dr. Sabin presented on the importance of veterinarians in food security. Food security has a broad definition that includes not only food safety, but availability of a variety of affordable, nutritious, utilisable food and a stable supply for everyone. The first three United Nations (UN) Global Goals are impacted by food security: No Poverty, Zero Hunger, Good Health and Wellbeing, and Quality Education. Veterinarians have a role in many aspects of food security, including production, safety, workforce training, management and infrastructure, risk analysis, policy, and community and economic development. The U.S. government has recently funded an initiative towards food security. It is the AVMA’s goal to educate veterinarians on all aspects of food security and bring veterinarians into the national and international conversation about food security policy.

**Committee Business:**

The Committee has agreed to meet virtually in the spring/summer to organize speakers and develop topics for next year’s in person USAHA/AAVLD meeting.

Dr. Karyn Havas of Pipestone Research submitted a resolution titled **Clarification on Limitations to Government Feed Import Risk Mitigation.** The original resolution requested:

*The United States Animal Health Association requests the U.S. Food and Drug Administration along with the United States Department of Agriculture (USDA) and U.S. Department of Homeland Security and Border Patrol (DHS) provide a report to the U.S. swine producers by the 2023 USAHA meeting that includes a clear summary as to what industries and stakeholders would be impacted by a risk mitigation program on imported soy and soy products from ASFV positive countries and how they would be impacted. The report should also include an assessment of the impact of the Canadian, Danish, and Australian feed risk mitigation program and identification of components that would mitigate risk for imports into the United States. Assessment should include cost, benefit, and needs for implementation (resources, authority, etc.). Further comments on how the Foreign Supplier Verification Program could be leveraged to prevent adulteration of animal feed with pathogens as is done for human pathogens should be included.*

Dr. Chris Ashworth and other members supported broadening the proposal to include cattle and other viral diseases that could lead to import restrictions.
COMMITTEE ON FOREIGN AND EMERGING DISEASES
Chair: Linda Logan, TX
Vice Chair: Karyn Havas, PA

Bobby Acord, NC; Bruce Akey, VA; Gary Anderson, KS; Sarah Bailey, ND; Andrew Bailey, DC; Tom Baker, ON; Maggie Baldwin, CO; Kerry Barling, KY; Nancy Barr, MI; Casey Barton Behravesh, GA; Lisa Becton, IA; Peter Belinsky, RI; Bethany Bradford, VI; Richard Breitmeyer, CA; Becky Brewer-Walker, OK; Steve Brier, MO; Charlie Broaddus, VA; Charles Brown, WI; Nancy Brown, IA; Minden Buswell, WA; Louise Calderwood, VA; IA; Amanda Chipman, IA; Dana Cole, CO; Maria Cooper, IN; Stephen Crawford, NH; Beate Crossley, CA; Marie Culhane, MN; Susan Culp, TX; S. Peder Cuneo, AZ; Donald Davis, TX; Joanna Davis, CO; Chase DeCoite, DC; Bryan Deimeke, KS; Ignacio dela Cruz, MP; Amy Delgado, CO; Thomas DeLiberto, CO; Barbara Determan, IA; Kim Dodd, WI; Brandon Dominguez, TX; Leah Dorman, OH; Tracy DuVernoy, MD; Anita Edmondson, CA; Jamee Eggers, IA; Brigid Elchos, MS; Dee Ellis, TX; Françoise Elvinger, NY; Jessica Emerson, FL; Nikki Enderle, MO; Doug Ensley, GA; Heather Martha Fenton, NT; Peter Fernandez, NY; Allison Flinn, MD; Katie Flynn, KY; Patricia Foley, IA; Anna Forseth, MT; Tam Garland, TX; Cyril Gay, MD; Robert Gerlach, AK; Samantha Gibbs, FL; Shana Gillette, CO; Colin Gillin, OR; Sandra Gilmore, IL; Michael Gilsdorf, MD; Gail Golab, IL; Stephen Goldsmith, DC; Tony Good, OH; Alicia Gorczyca-Southerland, OK; TrCE Guy, FL; Catherine Harris, NC; Nathan Harvey, ID; Karyn Havas, P; Tricia Hebden, ID; Julie Helm, SC; Janemarie Hennebelle, GA; Warren Hess, IL; Clayton Hilton, TX; Siddra Hines, WA; Heather Hirst, DE; Brian Hoefs, MN; Donald Hoenig, ME; Robin Holland, IL; Dennis Hughes, NE; Lucia Hunt, MN; John Hurst, Mn; Carla Huston, MS; Amber Itle, WA; Jarra Jagne, NY; Beth Johnson, KY; Annette Jones, CA; J.J. Jones, KS; Jamie Jonker, VA; Jefffrey Kaisand, IA; Mary Kelpinski, MI; Diane Kitchen, FL; Patrice Klein, DC; Kavishri Kokaram, CA; Darlene Konkle, WI; Berend Koops, KS; Angela Lackie, TX T.R. Lansford, TX; Elizabeth Lautner, IA; John Lawrence, ME; Mary Lewis, CA; Ailam Lim, WI; Rick Linscott, ME; Linda Logan, TX; Pat Long, NE; Aaron Louchs, NC; Margie Lyness, GA; Gustavo Machado, NC; Brooke MacNeill, CT; Rebecca Manson, NC; Brett Marsh, IN; David Marshall, NC; Scott Marshall, RI; Michael Martin, SC; Beatriz Martinez Lopez, CA; James Maxwell, WV; Thomas McKenna, MD; Katherine McNamara, VT; Sara McReynolds, KS; Miranda Medrano, MN; David Meeker, VA; Andrea Mikolon, CA; Gay Miller, IL; Sarah Mize, CA; Peter Mundschken, AZ; Lee Myers, GA; Michael Neault, SC; Cheryl Nelson, KY; Kayla Niel, IA; Emily Nietrzba, CA; Dustin Oedekoven, SD; Kristy Pabilonia, CO; Lanny Pace, MS; Elizabeth Parker, TX; William Parker, GA; Boyd Parr, SC; Elisabeth Patton, WI; Bill Pittenger, MO; Herbert Portillo, VA; Amanda Price, UT; Michael Pruitt, TX; Dave Pyburn, IA; Jeanne Rankin, MT; Sarah Reinikemeyer, MO; M. Gatz Riddell, AL; Suelie Robbe-Austerman, IA; Lisa Rochette, NC; Susan Rollo, TX; James Roth, IA; Nancy Beth Ruby, OK; Sherri Russell, MO; Mo Salman, CO; Larry Samples, PA; Will Sander, IL; John Sanders, WV; Shawn Schafer, OH; Rachel Schambow, MN; David Schmitt, IA; Ryan Scholz, OR; Michael Short, FL; Kathryn Simmons, DC; Shri Singh, KY; Jonathan Sleeman, WI; Julie Smith, VT; Justin Smith, KS; Rebecca Smith, IL; Harry Snelson, IA; Gordon Spronk, SD; Susan Stehman, PA; Darrel Styles, MD; Paul Sundberg, IA; Gregory Suskovic, MN; Manoel Tamassia, NJ; Dean Taylor, UT; Beth Thompson, MN; Sarah Tomlinson, CO; Mia Kim Torchetti, IA; Alberto Torres, AR; Binu Velayudhan, FL; Liz Wagstrom, DC; Sherrilyn Wainwright, CO; James Watson, MS; Dustin Weaver, GA; Patrick Webb, IA; Jennifer Weber, MO; Marcus Webster, GA; Kelli Werling, IN; Stephen White, WI; Michelle Willette, MN; John Williams, MD; William Wilson, KS; Ross Wilson, TX; Richard Winters, Jr., TX; Stephanie Wire, IL; Ryan Wolker, AZ; Mark Wood, GA; Caroline Yancey, NY; Melissa Yates, MD; Alan Young, SD; Christoph Young, CO; Marty Zaluski, MT.
The Committee met on October 11, 2022, at 10:15 a.m. in Minneapolis, Minnesota. There were approximately 140 individuals who were present in the committee session at any one time. Forty-one members signed the roster. Forty guests attended the meeting and five of them asked to join the committee. Additional participants joined virtually, however an accurate count was not established due to technical difficulty.

During the meeting, Dr. Linda Logan, chair and Dr. Karyn Havas, vice chair introduced themselves and welcomed the audience. Speakers were each introduced, and they presented presentations of approximately 15-20 minutes. One new resolution was proposed on point of care diagnostic tests to be addressed to USDA-APHIS-VS. The meeting was adjourned at 12:30 p.m.

All presentations this year were made by PowerPoint. One was presented remotely via the meeting portal and the other three were presented in person in the committee meeting. Due to technical issues, virtual participants could not view all presentations.

**2022 Monkeypox Response Update: One Health**
*Jeff Doty, Centers for Disease Control and Prevention (CDC)*

On May 17, 2022, the Massachusetts Department of Public Health (MDPH) Laboratory Response Network (LRN) laboratory confirmed the presence of orthopoxvirus DNA via real-time polymerase chain reaction (PCR) from lesion swabs obtained from a Massachusetts resident. Subsequent real-time PCR testing at CDC confirmed that the patient was infected with Monkeypox virus (MPXV). As of September 16, 2022, 23,499 probable and confirmed cases have been reported in 52 U.S. states and jurisdictions. Worldwide, 104 countries and territories have reported over 61,282 laboratory-confirmed cases during 2022. Monkeypox (MPX) is a zoonosis, caused by MPXV, a member of orthopoxvirus genus, and is endemic to forested areas of West and Central Africa. The virus is maintained in the environment by suspected animal reservoirs, including rodents (rope and sun squirrels, giant-pouched rats, African dormice) and shrews. While little is known about MPXV susceptibility in companion and other domestic animals, the virus has a broad host range and can infect a wide variety of mammal species, including non-human primates, anteaters, hedgehogs, and prairie dogs. CDC recommends that people with MPX avoid contact with mammals, including domestic animals and wildlife. There have been a few recent reports of dogs testing positive for MPXV by PCR. CDC is working with partners to assess MPXV infections in animals associated with human cases and to develop guidelines to prevent MPXV from establishing novel reservoirs through sustained animal-to-animal transmission.

**2022 U.S. HPAI Outbreak and Response**

**Goals of USDA High Pathogenicity Avian Influenza (HPAI) Response.** The goals of an HPAI response are to 1) detect, control, and contain HPAI in poultry as quickly as possible; 2) eradicate HPAI using strategies that seek to protect public health and the environment, and stabilize animal agriculture, the food supply, and the economy; and 3) provide science- and risk- based approaches and systems to facilitate continuity of business for non-infected animals and non-contaminated animal products. Achieving these three goals will allow individual poultry facilities, States, Tribes, regions, and industries to resume normal production as rapidly as possible. The objective is to allow the United States to regain disease-free status without the response effort causing more disruption and damage than the disease outbreak itself.

**2022 U.S. H5N1 HPAI Status.** On January 13, 2022, the United States Department of Agriculture’s (USDA) Animal and Plant Health Inspection Service (APHIS) confirmed the
presence of Eurasian H5 highly pathogenic avian influenza (HPAI) in samples collected in December of 2021 from a hunter harvested American wigeon in Colleton County, South Carolina. Additional confirmations in North Carolina and Virginia soon followed and by February 25, almost every State on the East Coast had reported HPAI. On February 8, 2022, APHIS confirmed the first domestic HPAI detection in a commercial poultry flock in Indiana. APHIS immediately implemented its emergency HPAI plans, which included culling all poultry at the operation, creating a quarantine zone around the affected operation, and enhanced disease surveillance.

As of Friday October 7, 2022, the United States has confirmed 511 commercial or backyard outbreaks in 42 affected states and confirmed HPAI in 2,746 wild bird specimens across the U.S., including Alaska and Washington D.C., depopulated over 47.17 million birds. As of September 30, 2022, APHIS has committed over $320 million for indemnity of depopulated birds and eggs, as well as over $105 million for depopulation, disposal, and virus elimination activities. Current associated personnel, state agreements, and field costs are estimated at an additional $100 million.

Based on analysis of more than 3,938 full genome sequences and in consideration of epidemiologic data available to National Veterinary Services Laboratories (NVSL), as of September 16, 2022, at least 85% analyzed U.S. detections in poultry premises and non-poultry flocks are consistent with independent wild bird introductions. Dr. Hegngi stressed the roll of humans in movement of the virus due to poor biosecurity practices. He reminded us not to blame everything on the wild birds. Much can be done about bioexclusion.

There is significant risk of additional detections moving into the spring of 2023, at commercial operations and backyard premises due to wild bird migration patterns. USDA has recommended increased precautions by poultry producers to prevent flock exposure to wild birds, revised 150-day fallow period to 120, developed a timeline for depopulation, disposal and virus elimination and change the way payment is made for compost litter. These new policies will help streamline future outbreak responses.

**Vector borne Disease Update**

*Lee Cohnstaedt*, USDA-ARS, Foreign Arthropod Borne Animal Disease Research Unit, *Seth Gibson*, *Kenneth Linthicum*, USDA-ARS Center for Medical, Agricultural, and Veterinary Entomology-Mosquito & Fly Research Unit

Japanese encephalitis virus (JEV) and Rift Valley fever virus (RVFV) – two prominent vector-borne zoonotic foreign animal disease pose important threats to U.S. agriculture and public health. The risks of introduction into the U.S. for both viruses are closely tied to changing climate regimes and other dynamic environmental factors in the U.S. and abroad that are becoming more prevalent by the year. The epidemiology of each of the viruses have strong mosquito components, supporting (i) adaptation of existing environment-mosquito-disease models designed for other vector-borne diseases and (ii) identification of optimal control modalities important in containing these viruses if they appear in the U.S. JEV is native to Southeast Asia but with global commerce is likely to be introduced into the U.S., which has suitable hosts, mosquito vector species, and environments. A risk analysis of these three components of the epidemiological triad will be presented as will a modeling tool to forecast mosquito transmitted viral outbreaks based on case data and weather conditions.

RVFV is endemic to the African continent with large epizootics observed at the decadal scale since the early 20th century, but the virus was first detected in the Arabian Peninsula in 2000 and shows increasing patterns of interepizootic transmission on the annual scale. This virus can be spread by mosquitoes as well as direct contact and causes widespread mortality and morbidity in domestic ungulate livestock as well as humans. High viremias in infected livestock moved for legal and illegal trade as well as in humans traveling from and to RVFV-endemic regions can spread this virus to the U.S., southern Europe, and
other regions worldwide where permissive ecological infrastructure could support rapid establishment. Our speakers discussed how modeling of connectivity among potential sources and emerging regions can guide targeted surveillance and control activities to reduce the risk of RVFV and JEV introduction into the U.S. Both of these arboviruses pose a significant threat to human health and livestock health and surveillance for their entry to the U.S. should be taken very seriously.

**African Swine Fever (ASF) in Hispaniola: An Update**

*Amy Delgado*, USDA-APHIS-VS, Center for Epidemiology and Animal Health

Following the detection of ASF in the Dominican Republic (DR) in July 2021 and Haiti in September of 2021, APHIS initiated a series of activities to support disease control and eradication on the island of Hispaniola. APHIS support has included: technical support for epidemiology, surveillance design, incident management, and field implementation; laboratory diagnostics, supplies, and staffing support; and training and supplies for the field and ports to support biosecurity and biocontainment. This work has been done in coordination with the Food and Agriculture Organization (FAO), World Organization of Animal Health (WOAH), Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA), and the Inter-American Institute for Cooperation on Agriculture (IICA) as part of the Global Framework for Transboundary Animal Diseases (GF-TADS).

APHIS has five full time staff working on ASF in the Dominican Republic. As the effort continues into its second year, our focus will be on supporting more organization around the complete control program in the Dominican Republic, with development of measurable metrics to evaluate progress. APHIS will continue to work to support the Dominican Republic in surveillance, diagnostics, data management, indemnity, biocontainment, and movement controls. By the end of 2022, it is expected that a total of 20 canine units will be operating in several international airports in the DR with the specific goal of inspecting passengers with destination to the U.S. Additionally, APHIS is supporting the purchase of additional autoclaves and incinerators to process confiscated risk materials in sea-port and airports.

Support for ASF eradication in Haiti continues to be affected by the geopolitical and socio-economic situation in the country. APHIS continues to communicate with Haiti to attempt to make meaningful inroads on ASF controls. APHIS has also partnered with U.S. Agency for International Development and the FAO to support disease control, risk communication and community engagement, alternative livelihood support for ASF-affected small holder farmers, and strategic coordination between the Dominican Republic, Haiti, and the region.

**Committee Business:**

The Committee considered one resolution on point of care rapid kits for use in the event of a foreign animal disease outbreak and the need to set new USDA policies to make exceptions in such an event. The resolution was slightly word smithed and the vote to adapt was unanimous. This resolution with be forwarded to the USAHA leadership and membership for hopeful adoption. The 2019, 2020 and 2021 resolutions were tabled for review at a quarterly meeting. The committee had to close the meeting at 12:30 due to time constraints. We propose a quarterly meeting be held in January 2023.
COMMITTEE ON GLOBAL ANIMAL HEALTH AND TRADE (GAHT)
Chair: Elizabeth Parker, TX
Vice Chair: H.M. “Tim” Richards, III, HI

Bobby Acord, NC; Gary Anderson, KS; Marianne Ash, IN; Rich Baca, CO; Andrew Bailey, DC; Casey Barton Behravesh, GA; David Baum, IA; Carolynn Bissett, VA; Amelia Breining, DC; Richard Breitmeyer, CA; Paul Brennan, IN; Becky Brewer-Walker, OK; Susan Bright-Ponte, MD; Charlie Broadus, VA; Charles Brown, WI; Minden Buswell, WA; Louise Calderwood, VA; Anthony Clayton, MO; Robert Cobb, GA; Karen Conyngham, TX; Maria Cooper, IN; Michael Costin, IL; Stephen Crawford, NH; Brad De Groot, WY; Chase DeCoite, DC; Ron DeHaven, CA; Bryan Deimeke, KS; Ignacio dela Cruz, MP; Barbara Determan, IA; Bud Dinges, TX; Kim Dodd, MI; Brandon Dominguez, TX; Leah Dorman, OH; Tracy DuVernoy, MD; Anita Edmondson, CA; Dee Ellis, TX; Nikki Enderle, VA; James England, ID; William Fales, IA; Heather Margaret Fenton, NT; Peter Fernandez, NY; Kathy Finnerty, NY; John Fischer, GA; Allison Flinn, MD; Katie Flynn, KY; Anna Forseth, DC; Tony Frazier, AL; Kaylie Fritts, NE; Tam Garland, TX; Cyril Gay, MD; Robert Gerlach, AK; Lance Gerlach, NC; Samantha Gibbs, FL; Colin Gillin, OR; Linda Glaser, MN; Gail Golab, IL; Stephen Goldsmith, DC; Chelsea Good, KS; Tony Good, OH; Alicia Gorczyca-Southerland, OK; Kristin Haas, VT; Keith Haffer, SD; Rod Hall, OK; Steve Halstead, MI; Nephi Harvey, UT; Charles Hatcher, TN; Karyn Havas, MN; Burke L. Healey, CO; Carl Heckendorf, CO; Julie Helm, SC; Amy Hendrickson, CO; Janemarie Hennebelle, GA; Bob Hillman, ID; Robert Hilsenroth, FL; Siddra Hines, WA; Donald Hoenig, ME; Donald Hoenig, ME; Joseph Huff, CO; Dennis Hughes, NE; John Hurst, MN; Carla Huston, MS; Amber Itle, WA; Ashley Johnson, IN; Annette Jones, CA; Jamie Jonker, VA; Anne Justice-Allen, AZ; Jeffrey Kaisand, IA; Mary Kelpinski, MI; Diane Kitchen, FL; Darlene Konkle, WI; Angela Lackie, TX; T.R. Lansford, TX; Elizabeth Lautner, IA; Scott Leibsle, ID; Jane Lewis, CT; Mary Good, CT; Eric Liska, MT; Jim Logan, WY; Linda Logan, TX; Gene Lollis, FL; Travis Lowe, MN; Margie Lyness, GA; Gustavo Machado, NC; Bret Marsh, IN; David Marshall, NC; Michael Martin, SC; Beatriz Martinez Lopez, CA; Aimee Matheny, VA; Jay Mattison, WI; Thomas McKenna, MD; Sara McReynolds, KS; Miranda Medrano, MN; David Meeker, VA; Antone Mickelson, WA; Andrea Mikolon, CA; Mendel Miller, SD; Gay Miller, IL; Cheryl Miller, IN; Sarah Mize, CA; Peter Mundschken, AZ; Michael Neault, SC; Cheryl Nelson, KY; Kayla Niel, PA; Susan Noh, WA; Dustin Oedekoven, SD; Greg Onstott, MO; Elizabeth Parker, TX; William Parker, GA; Boyd Parr, SC; Allison Phibbs, DC; Bill Pittenger, MO; Amanda Price, UT; Valerie Ragan, VA; John Ragan, VA; Jeanne Rankin, MI; Tim Richards, HI; Susan Rollo, TX; James Roth, IA; Joan Dean Rowe, CA; Mo Salman, CO; Larry Samples, PA; Will Sander, IL; John Sanders, WA; Shawn Schafer, OH; Rachel Schambow, MN; David Schmitt, IA; Stacey Schwabenlander, MN; Andy Schwartz, TX; Aaron Scott, CO; Charly Seale, TX; Laurie Seale, WI; Kyle Shipman, IN; Richard Sibbel, IA; Kathryn Simmons, DC; Julie Smith, VT; Justin Smith, KS; Gordon Spronk, MN; Susan Stehman, PA; Steve Stubberg, MO; Paul Sundberg, IA; Diane Sutton, MD; Tahnee Szymanski, MT; Manoel Tamassia, NJ; Jane Teichner, FL; Beth Thompson, SD; Peter Timoney, KY; Tracy Tomascik, TX; Alberto Torres, AR; Alex Turner, CO; Charles Vail, CO; Michele Walsh, ME; James Watson, MS; Patrick Webb, IA; Jennifer Weber, MO; Stephen White, WI; Cliff Williamson, DC; William Wilson, KS; Ross Wilson, TX; Josh Winegarner, TX; Nora Wineland, MI; David Winters, TX; Richard Winters, Jr., TX; Stephanie Wire, IL; Cindy Wolf, MN; Ryan Wolker, AZ; Mark Wood, GA; Caroline Yancey, NY; Marty Zaluski, MT; Scarlette Zirkle Gotwals, PA.

The Committee met on Tuesday October 11, 2022, at the Hyatt Regency Hotel, Minneapolis, Minnesota, from 8:00 a.m. to 10:00 a.m. There were more than 50 members and guests present. Dr. Parker opened the committee meeting by introducing herself and Dr. Richards. It was noted that some attendees were participating virtually. Dr. Parker introduced each speaker as they presented.
Presentations and Reports

World Organization for Animal Health
(WOAH, formerly OIE) General Session 89 Update
Gary Egrie, USDA-APHIS, Office of International Affairs

Dr. Egrie gave an update on decisions taken during the WOAH 89th General Session (GS89) held in Paris, France on May 23-26, 2022. Nearly 500 participants from 151 countries participated either in person or virtually. Twenty-eight resolutions were adopted, and 70 international standards were updated. Chapters which were updated can be found on the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Veterinary Services (VS) website. Of note, The Bovine Spongiform Encephalopathy (BSE) chapter underwent about three years of extensive review and comments, including input from the United States Government (U.S.), and the changes proposed would have altered the points-based approach countries have been following to monitor for BSE, to a risk-based surveillance program. Enough countries expressed concern that such a risk-based approach would be a more costly program to operate, or that the chapter did not include explicit language regarding a ruminant-to-ruminant feed-ban, that the chapter was withdrawn from consideration for adoption at GS89. The U.S. government interpretation of the changes proposed is that the new risk-based surveillance would be less costly, and non-adoption of the chapter highlights the need for further engagement with member countries to help clarify and explain the benefits of the proposed changes. Also of note, was the election of Dr. Rosemary Sifford, the APHIS Veterinary Services Deputy Administrator and the Delegate to the WOAH, as the Secretary General of the Executive Board of the Regional Commission of the Americas. This board represents the 32 countries of the Region of the Americas. Dr. Sifford being on the Executive Board offers the USA an opportunity to drive issues of importance to the USA in the Region and globally. Dr. Egrie also discussed a recent memorandum of understanding (MOU) signed between the WOAH and the United Nations Environment Program (UNEP).

Risk Identification Unit’s International Foreign Animal Disease (FAD) Monitoring
Amy Delgado, USDA-APHIS, Center for Epidemiology and Animal Health (CEAH)

Dr. Delgado gave an overview of CEAH’s monitoring of global FADs. CEAH monitors global animal and zoonotic diseases and hazards of high consequence to the U.S. animal industry. Initial assessments of potential risks account for changes in the global distribution, the epidemiology, and the characterization of global animal health hazards, as well as keeping up on global information to identify potential drivers of disease emergence.

These drivers may include impacts from disruption of food-value chains, increase in human-wildlife-livestock interactions, civil unrest, extreme climate changes and cross-border economic influences, for example. Global situation updates, along with assessment of potential strategies to prevent entry of transboundary animal diseases are provided to decision-makers, contributing to preparedness and response plans to protect the U.S. animal industry.

Monitoring international and Federal reporting systems, including verification of information obtained through multiple web-scraping tools pulling international citizen, industry, and government news reports pick up potential early indications of the emergence or re-emergence of a transboundary animal disease of severe consequence to animals and to financial and food security. CEAH reaches out to APHIS International Services (IS), as well as to international organizations, such as the Food and Agriculture Organization of the United Nations (FAO) and the OIE/FAO Network of Expertise on Animal Influenza Organization (OFFLU), that have access to local, on-the-ground insight to verify the potential emergence of a disease in a new location, new species, or if local information verifies that there has been a change in the epidemiology of the disease.
CEAH is developing disease reporting dashboards, currently using data from the World Organization for Animal Health’s (WOAH’s) World Animal Health Information System (WAHIS) to visualize and query the international reports of animal and zoonotic diseases. Reports generated from CEAH’s global monitoring are produced in multiple formats for internal decision-makers as well as for public awareness.

Overview of SHIC’s Global Disease and Health monitoring

Megan Niederwerder, Swine Health Information Center (SHIC)

Dr. Niederwerder gave an overview of SHIC’s domestic and global disease surveillance activities, including how information is obtained, analyzed, and shared. SHIC’s mission is to protect and enhance the health of the U.S. swine herd through 1.) coordinated global disease monitoring, 1.) analysis of swine health data, and 3.) targeted research investments that minimize the impact of future disease threats. SHIC is actively monitoring swine diseases of concern in China, Canada, Germany, Poland, Romania, Japan, Russia, U.S., Vietnam, Korea, Southeast Asia, Brazil and Australia. One example is a current project with the University of Minnesota, Iowa State University, and the five National Animal Health Laboratory Network (NAHLN) animal veterinary diagnostic laboratories who conduct over 80 percent of U.S. swine diagnostics. Under this project the Swine Disease Reporting System (SDRS) is monitoring diagnostic data for animal health decisions and rapid response to crises events. The objective is to share information on the activity of endemic and emerging pathogens affecting the U.S. swine population, assisting veterinarians and producers in making informed decisions on disease prevention, detection, and management. SHIC also monitors current detection based on historical data in order to identify trends and glean pattern information. The SDRS project also does proactive monitoring of polymerase chain reaction (PCR) data which was key to detecting emergence of a new porcine reproductive and respiratory syndrome virus (PRRSV) strain. Regional reporting of information from the SDRS SHIC effort offers an opportunity for state response and management. Efforts have also resulted in identifying needs for the wean-to-market phase of swine production. An increase in PRRSV detection in wean-to-market precedes increased PRRSV in adult/sow farms. As a result, SHIC and partners are working on a wean-to-harvest biosecurity program specific to the needs of this sector.

Dr. Niederwerder discussed SHIC’s Swine Global Disease Monitoring Report whose purpose is to increase awareness for the swine value chain and stakeholders and support the prevention and mitigation of hazards. This is accomplished by identifying the hazards – events with potential to harm the U.S. swine industry; and by using an event-based surveillance system which provides immediate information to the industry and veterinarians. SHIC leverages a network of local experts, using robust epidemiological interpretation of the context and is supported by a network of international collaborators.

One example of a strategic partnership is with OIRSA and the national Animal Health Directorate in the Dominican Republic. This partnership provided access to the weekly African swine fever (ASF) reports (in Spanish), and the ability to follow the dynamic of the epidemic in each monthly report. Currently only 224 of 1,615 confirmed outbreaks have been reported to WOAH since the outbreak began in June 2021. Lastly, SHIC produces timely and monthly risk communication products. Since November 2017, 57 monthly reports have been published, over 500 events included across greater than 50 countries (e.g., a September 2022 in-depth analysis of a May-August 2022 foot-and-mouth disease [FMD] in Indonesia, including highlights of the regional response to the emergency) and six immediate release reports (e.g., FMD false alarm in the United Kingdom in June 2022).

Live Animal Imports and Exports – APHIS foreign animal disease regionalization agreements and compartmentalization efforts

Joyce Bowling-Heyward and Shanna Siegel, USDA-APHIS-VS
Drs. Bowling-Heyward and Siegel jointly presented on the use of compartmentalization and zoning for U.S. business continuity. Zoning relies on geographical boundaries to delineate an area with a designated animal health status and the goal/benefit is to minimize trade disruption during a disease outbreak while safely allowing trade to continue. Many countries currently recognize various U.S. zones for different sectors/diseases and continual negotiations and conferring of information is done by APHIS. Countries vary regarding if they recognize the country, a state, a county, or a smaller geographical area (e.g., premise) as a zone. The exporting region must demonstrate transparency in reporting, willingness to accept possible audits from importing region, competence in traceability and movement controls, a good track record in ability to implement zoning, and excellent surveillance in free and affected areas. Acceptance of U.S. zoning is constantly evolving as the U.S. government negotiates with trading partners and the goal is to negotiate restrictions to the smallest possible area.

Compartmentalization can be utilized as an adjunct to zoning – it is not an “either/or”. A compartment is an animal subpopulation contained in one or more establishments under a common biosecurity management system with a distinct health status with respect to a specific disease (or diseases) for which required surveillance, control and biosecurity measures have been applied for the purposes of international trade. A compartment relies on management practices to maintain animal health status on a group of related premises. The premises do not need to be geographically co-located. Establishment of a compartment can be expensive and time consuming to implement and can limit business options. However, compartmentalization has been demonstrated to be worthwhile when there is a need to guarantee business continuity, the cost of additional biosecurity is justified by the unique nature or high value of the product, or trade disruption from a particular facility would be catastrophic. Countries are less familiar with compartmentalization and the U.S. currently only has two – Hong Kong and Indonesia for HPAI – allowing the option to export, regardless of proximity to a notifiable avian influenza affected premises.

Recently APHIS utilized a new WOAH concept – a protection zone (PZ) in response to African swine fever (ASF) being detected in the Dominican Republic. PZs are specific types of zones meant to address high risk areas, are implemented prior to disease incursion and are designed to prevent spread to the rest of the country. Protection measures need to be maintained constantly to minimize the threat of disease introduction, assure that surveillance will find disease quickly if introduced, and ensure that it will not be spread outside of the zone. The current PZ was established for Puerto Rico (P.R.) and U.S. Virgin Islands (USVI). Incursion of ASF into P.R. and/or USVI would not impact trade from the rest of the U.S. for those countries that agree to accept the protection zone in advance. Six countries have agreed to accept the protection zone to date.

**Committee Business:**

Two resolutions, entitled, *HPAI Compensation and Indemnification* and *U.S. Compartmentalization Program Recognition*, were proposed and passed during the business session, after minor non-substantive modifications to each. The *HPAI Compensation and Indemnification* resolution had also passed the Committee on Animal Health Surveillance and Information Systems on October 10, 2022. A third resolution on export testing requirements was not offered due to lack of time. The resolution will be offered at the Committee on Parasitic and Vector-Borne Diseases. All three resolutions had been previously shared via email with committee members and the committee had conducted a virtual call on July 29, 2022, for the author of the latter resolution to discuss the intent. This was followed by a committee virtual webinar presentation on September 13 from Amber Headen, APHIS Director, Live Animal Exports, to explain U.S. export of live animals, who is responsible for what in U.S. government for the negotiations and protocols for our government negotiations and agreements.

The Committee adjourned at 10:04 a.m.
USAHA/AAVLD COMMITTEE ON THE NATIONAL ANIMAL HEALTH LABORATORY NETWORK (NAHLN)
Co-Chair: Nora Wineland, MI
Co-Chair: François Elvinger, NY

John Adaska, CA; Bruce Akey, VA; Victor Alzona, FL; Gary Anderson, KS; Marianne Ash, IN; Cat Barr, NC; Casey Barton Behravesh, GA; Tim Baszler, WA; Tracy Baszler, CO; Samantha Beaty, TN; Lisa Becton, IA; Y Reddy Bommineni, FL; Richard Breitmeyer, CA; Beverly Byrum, OH; Craig Carter, KY; Robert Cobb, GA; Emily Cooper, OK; Maria Cooper, IN; Estela Cornaglia, QC; Beate Crossley, CA; Marie Culhane, MN; Chase DeCoite, DC; Barbara Determan, IA; Kim Dodd, MI; François Elvinger, NY; Kristy Farmer, AL; Allison Flinn, MD; Larry Forgey, MO; Anna Forseth, DC; Rick Fredrickson, IL; Brenda Glidewell, GA; Patricia Godwin, KY; Gail Golab, IL; Stephen Goldsmith, DC; Patrick Halbur, IA; Rod Hall, OK; Steve Halstead, MI; Jane Hennings, SD; Bob Hillman, ID; Heather Hirst, DE; Stephen Hooser, IN; Jeffrey Kaisand, IA; Elizabeth Lautner, IA; John Lawrence, ME; Steve Lenz, IN; Ailam Lim, WI; Mary Jane Lis, CT; Christina Loiacono, IA; Rodger Main, IA; David Marshall, NC; Brian McCluskey, CO; Thomas McKenna, MD; Doris Miller, GA; Richard Mock, NC; Peter Mundschenk, AZ; Dustin Oedekoven, SD; Kristy Pabilonia, CO; Lanny Pace, MS; Elizabeth Parker, TX; Boyd Parr, SC; Amar Patil, NJ; Allison Phibbs, DC; Robert Poppenga, CA; Dave Pyburn, IA; Lisa Quiroz, CA; Debbie Reed, KY; Jamie Retallick, KS; M. Gatz Riddell, AL; Suelee Robbe-Austerman, IA; Jeremiah Saliki, OK; Rachel Schambow, MN; Renee See, WV; Kyle Shipman, IN; Michael Short, FL; Kathryn Simmons, DC; Shri Singh, KY; Joan Smyth, CT; Kevin Snekvik; Harry Snelson, IA; Wendy Stensland, IA; Amy Swinford, TX; Manoel Tamassia, NJ; Dean Taylor, UT; Deepanker Tewari, PA; Beth Thompson, SD; Jerry Torrison, MN; Binu Velayudhan, GA; Nora Wineland, MI; Shuping Zhang, MO.

The Committee met on October 9, 2022, at the Annual Meeting in Minneapolis, Minnesota. There were over 70 members and guests present in-person along with virtual attendees. Twenty-three (23) committee members and 27 non-committee members signed-in, of which 17 requested to become members of the committee.

Presentations and Reports

NAHLN Update
Christina Loiacono, Beth Harris, and Kelli Almes, NAHLN

The committee was treated to a NAHLN video celebrating the 20-year anniversary which featured several NAHLN laboratories across the country. The following additional information was shared:

NAHLN is celebrating 20 years of excellence in safeguarding animal health:
• Developed the roll out plan,
• Collected information from NAHLN laboratories to share on social media and in a video reel at AAVLD,
• Developed a document highlighting major milestones in the previous ten years to supplement the document created to share highlights of the NAHLN’s first ten years.

2022 Highly Pathogenic Avian Influenza (HPAI) Outbreak:
• 46 laboratories were activated within 33 states. All laboratories are messaging results.
• Weekly calls with NAHLN laboratories to discuss HPAI response and any other significant issues – these calls had high and very positive resonance from all laboratories with usually more than 90 participants.
• Collaborated with electronic medical record (EMRS) staff to manage messaged results.
• Collaborated with various individual incident management teams (IMT).
• Participated in weekly calls with all active IMT Direct Reporting Organizations (DROs) and EMRS staff.
• Participated in Incident Coordination Group (ICG) calls and Veterinary Services Deputy Administrator (VSDA) update calls.
• Collaborated to develop a draft standard operating procedure (SOP) for incorporation of NAHLN laboratory representatives into the ICS and identify specific interactions with IMTs.

**ASF Preparedness:**
• Provided technical support for order messaging for samples incoming to the Puerto Rico laboratory from field surveillance testing.
• Added two laboratories for a total of 12 NAHLN laboratories currently performing African swine fever/classical swine fever (ASF/CSF) active surveillance: CA, FL, GA, IL, IA, KS, MN, MO, NE, NC, SD, TX, with additional 37 laboratories approved for ASF/CSF Foreign Animal Disease (FAD) Investigation and Response Testing.

**ASF Diagnostics**
- **Serology**
  - Collaborating with Foreign Animal Disease Diagnostic Laboratory (FADDL) to deploy ASF serology to the NAHLN for heightened surveillance in the U.S.
  - Collaborating with FADDL to update current ASF enzyme-linked immunosorbent assay (ELISA) SOP for use in NAHLN.
  - ASF Serology Negative Cohort
- **PCR**
  - Evaluating the ASF/CSF Multiplex for deployment to NAHLN laboratories
  - Methods Technical Working Group (MTWG) Evaluation of Tetracore ASF polymerase chain reaction (PCR) reagents recently licensed for use in the US. MTWG recommendation is to use if needed for outbreak testing with appropriate deviation.

**Addressing Capacity Needs**
- Collaborated with CEAH modeling team providing information about NAHLN to assist them in completing a project to estimate the laboratory testing expectations during an ASF outbreak.
- Collaborated with vendors (ThermoFisher, Tetracore and Idexx) to develop options such as stockpiling or rolling inventory for maintaining needed inventory to sustain capacity.
- Formation of Stockpiling Working Group with completion of guidance document to be utilized by other laboratories for calculation of testing capacity.
Completed Electronic Data Summit
• Messaging Summit hosted Dec 8-9, 2021.
• Included both internal and external stakeholders who were asked to share and discuss their needs and expectations for electronic messaging.
• Established Information Technology (IT) standards Committee Meeting - now meeting regularly to review standards in results messaging with laboratory and VS personnel.

Collaboration with Centers for Disease Control and Prevention (CDC) through an Interagency agreement (CDC-IAA) to support SARS-CoV-2 surveillance testing in NAHLN laboratories.
• NAHLN provided a total of $484,570 through the CDC-IAA to twelve NAHLN laboratories supporting projects that will provide SARS-CoV-2 surveillance testing in companion animals, shelters, zoo animals, mink and small exotic animals.

Antimicrobial Resistance NAHLN Activity Review
• Accepted as an Animal and Plant Health Inspection Service (APHIS) Agency Priority Goal for FY 2022.
• Goal – establish a long-term antimicrobial resistance (AMR) surveillance program by September 30, 2023, with 30 laboratories participating annually.
• NAHLN laboratories will request participation through their annual agreement document. Laboratories outside the NAHLN will continue to request participation through the annual request for proposal (RFP) document.
• Maintain current list of isolates monitored.
• Change to collecting 5,000 isolates per year.
• Include whole genome sequencing results into the NAHLN AMR public dashboard.
• Farm Bill
• Fourth cycle on-going

NAHLN Activity Review- Coordinating Council will review each of these on monthly calls
1. Develop a strategic direction for NAHLN that includes technological, infrastructure, response capacity, and other relevant goals.
2. Define and set goals for NAHLN capacity.
3. Improve messaging to increase laboratory participation in NAHLN activities.
4. Identify one VS organization to oversee, monitor, and improve data quality. (Internal)
5. Increase the value of NAHLN participation to laboratories.
6. Increase stakeholder interaction opportunities and engagement within the NAHLN community.
7. Establish a position on Point of Care (POC) testing.
8. Improve laboratory engagement practices across VS. (Internal)
9. Identify the best long-term approach to support NAHLN IT needs. (Internal)
10. Ensure Diagnostics and Biologics (D&B), NVSL, NAHLN Program Office operational continuity. (Internal)
11. Establish an annual report that provides key performance indicators to stakeholders.
12. Examine the current workforce and workload to determine if more resources need to be assigned to the D&B, NVSL, NAHLN Program Office. (Internal)
NAHLN Codification

- VS intends to add a new section into 9 Code of Federal Regulations (CFR) part 57 or Part 69.
- Consulted Office of General Counsel (OGC) to determine how/where to include information.
  - Administrative Procedure Act (APA) requires guidance that is binding on the agencies, or the regulated parties should be placed in the Rule or in the Agreement for Participation in NAHLN.
    - Minimum NAHLN requirements
    - Application process
    - Accountability
  - If binding language is in Program Standards, must undergo a notice-and-comment period.
- NAHLN will need to align the three documents to avoid repetition.
  - Regulation (draft pending)
  - NAHLN Program Standards
  - NAHLN Agreement for Participation

Working Groups

- NAHLN IT
  - Message monitoring
- NAHLN MTWG
  - Incorporating deliverables from Farm Bill projects into MTWG review
  - 5-year plan for technology review
  - Potential for developing POC exercise w/ Exercises and Drills Working Group (EDWG) committee.
  - NVSL SOP harmonization
  - Whole genome sequencing standardization parameters
  - SIV H1/H3 subtyping PCR assay
- NAHLN EDWG
  - Annual exercise June 2022
  - Laboratory Emergency Management Committee/ASF Tabletop Exercise Workshop
  - Expanding Portal resources
  - Quarterly webinars
  - Working to increase the number of drills/year.

Appropriations and Farm Bill Update

Bruce Akey, Independent Consultant

The American Association of Veterinary Laboratory Diagnosticians (AAVLD) and Government Relations Committee (GRC) have been working to increase funding for the NAHLN through the appropriations process. Successful meetings with Senate appropriations staff led to increased NAHLN funding by $5 million over the President’s budget. The House in addition included the language below for FY23, which represents an approximately $2.2 million increase in the NAHLN funding through USDA:

“National Animal Health Laboratory Network (NAHLN) - The laboratories within the NAHLN network are on the frontline for detection of newly identified and reemerging animal diseases. NAHLN laboratories provide a critical contribution to animal and human health, as demonstrated during the pandemic. Therefore, the Committee rejects the budget reduction and continues to provide funding for NAHLN through both APHIS and NIFA at no less than $18,500,000 for fiscal year 2023. This amount is in addition to mandatory funding provided through the 2018 Farm Bill for Animal Disease Prevention..."
and Management. The Committee encourages the Department to provide robust funding from the 2018 Farm Bill for NAHLN.”

The federal government is funded under a continuing resolution until December 16 and AAVLD will urge Congress to include the $5 million plus up in a possible omnibus bill. AAVLD will work with stakeholders and Senate and House agriculture committee staff to push for an additional $10 million in mandatory funding per year in the FY23 Farm Bill. Once a clearer picture of Congress emerges after the election, there will be a better understanding on how the House will address the Farm Bill.

NAHLN and Law Enforcement

Dr. Goldsmith discussed the roles of and overlap between the FBI and the NAHLN system of animal disease diagnostic laboratories. The presentation focused on the broad categories of threats and threat actors that could target and disrupt the U.S. agriculture sector including the laboratories involved in diagnostics and research and development.

Dr. Goldsmith discussed the FBI’s WMD program both at the Headquarters and Field Offices and the key roles of the WMD Coordinators that work with the state, federal, academic, public, and private partners in the US agriculture sector. He also discussed the threat to biotechnology intellectual property by both foreign and domestic adversaries and competitors as well as emerging cybersecurity threats to agriculture to include laboratory operations and agriculture department data and cyber systems. He ended with a discussion of laboratory comprehensive biosecurity programs, the risk of insider threat activities, and recommendations to recognize suspicious incidents and enhance the protection of the critical functions of biological laboratory facilities.

Discussion topics
There were two discussion topics listed on the agenda: Where do NAHLN Laboratories fit in the Incident Command System (ICS) and NAHLN Laboratory capacity and preparedness. While there were many differences around where the NAHLN laboratories fit in ICS, it really boiled down to clear communication and relationships within each state. Laboratories need to be included in planning. Some laboratories felt they were included to the degree they needed to be, and others were not able to get the information they needed and felt there needed to be more inclusion, in particular with industry partners. NAHLN Laboratory capacity was not discussed as a full group, but it is something the NAHLN Laboratory program staff are looking into along with the best way to coordinate having supplies for laboratories as those are not presently being included in the National Veterinary Stockpile.

Committee Business:
There were no new resolutions brought before the committee. The committee then reviewed the 2019 resolutions that had come out of the NAHLN Committee. Resolution 4 was discussed and while not every piece of that has been completed, it is well on the way to being done, so the committee voted to sunset that resolution. Resolution 8 concerning the inclusion of BSL-3 necropsy space for Level 1 laboratories was voted to be retained. Resolution 10 concerning mandatory funding through the 2018 Farm Bill was voted to sunset as good and continuous progress was made and that we are nearing the end of the life of the 2018 Farm Bill.

Other Notes: The committee plans to continue holding quarterly calls to keep members updated on key topics.
COMMITTEE ON NOMINATIONS AND RESOLUTIONS
Chair: Charles Hatcher, TN

J Lee Alley, AL; Ethan Andress, ND; Joy Bennett, NY; Philip Bradshaw, IL; Richard Breitmeyer, CA; Stephen Crawford, NH; Barbara Determan, IA; Kristin Haas, VT; Steve Halstead, MI; Charles Hatcher, TN; Janemarie Hennebelle, GA; Bob Hillman, ID; Donald Hoenig, ME; Amber Itle, WA; Bruce King, UT; Maxwell Lea, Jr., LA; James Leaflsten, SD; Donald Lein, NY; Gene Lollis, FL; Bret Marsh, IN; Michael Marshall, UT; David Marshall, NC; Richard McCapes, CA; David Meeker, VA; Lee Myers, WA; Boyd Parr, SC; John Ragan, VA; David Schmitt, IA; H. Wesley Towers, DE; Max Van Buskirk, PA; Richard Willer, AZ; Larry Williams, NE; Marty Zaluski, MT.

NOMINATIONS OFFICERS

PRESIDENT ................................................................. Dustin Oedekoven, Pierre, SD
PRESIDENT-ELECT .................................................. Steven Rommereim, Alcester SD
FIRST VICE-PRESIDENT ............................................ Stephen Crawford, Concord, NH
SECOND VICE-PRESIDENT ................................. Peter Mundschenk, Phoenix, AZ
THIRD VICE-PRESIDENT .......................................... Charles Broaddus, Richmond, VA
TREASURER ................................................................. Beth Thompson, Pierre, SD

DISTRICT DELEGATES

NORTHEAST .......................................................... David McElhaney, PA; Robert Gibson, NH
NORTH CENTRAL ..................................................... Taya Runyan, SD; Jamee Eggers, IA
SOUTH .................................................................... Gene Lollis, FL; Alberto Torres, AR
WEST ....................................................................... H. M. Richards, III, HI; Brian McCluskey, CO

RESOLUTIONS

RESOLUTION NUMBER: 1 APPROVED
SOURCE: COMMITTEE ON ONE HEALTH
SUBJECT MATTER: INCREASED FISCAL YEAR 2024 FUNDING FOR THE UNITED STATES

DEPARTMENT OF AGRICULTURE, ANIMAL AND PLANT HEALTH INSPECTION SERVICE, WILDLIFE SERVICES
NATIONAL RABIES MANAGEMENT PROGRAM AND REQUEST THE DEVELOPMENT OF AN ORAL RABIES BAIT/VACCINE BANK

BACKGROUND INFORMATION:

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS), National Rabies Management Program (NRMP) has demonstrated that strategic implementation of cooperative oral rabies vaccination (ORV) programs targeting wildlife are cost-effective in reducing rabies transmission to protect human and animal health and reduce the cost of living with rabies. The World Organization for Animal Health (WOAH) determined that the most effective strategy to control terrestrial rabies targets the sources of infection (i.e., wildlife vector populations) with landscape scale control efforts. ORV programs are designed to immunize target wildlife species by increasing the percentage of rabies-immune animals within vaccination zones, resulting in the reduction of rabies cases, prevention of viral
spread (Phase 1 goal of the NRMP), and eventual raccoon rabies variant elimination (Phase 2 goal of the NRMP).

A comprehensive raccoon rabies management strategy has been cooperatively developed with federal, state, provincial and local partners for the elimination of the raccoon rabies variant in the United States (US) and Canada. In fiscal year 2021, the NRMP and cooperators distributed >9 million ORV baits in 16 Eastern Regional states to combat raccoon rabies and >1.1 million in Texas to prevent the reemergence of canine rabies in coyotes and grey fox rabies along the border with Mexico. The NRMP continues to make progress towards raccoon rabies elimination by removal of a Virginia ORV zone where raccoon rabies has been eliminated and by adding new zones in Alabama to prevent movement into western Mississippi. Another new ORV zone was added in eastern Lake Ontario of New York where raccoon rabies has been enzootic. To date, there were no new NRMP initiated contingency actions in 2020 or 2021. The Canadian Provinces of Ontario, Quebec, and New Brunswick remain free of raccoon and red fox rabies.

The existing national supply chain problems are causing concern for the NRMP to meet the needs of licensed bait/vaccine units for ORV distribution. There are two companies manufacturing vaccines and the units are made to order but the shelf life is only 18 months. The important annual ORV distribution is time sensitive depending on the geographic location—Maine to Alabama for raccoon rabies and Texas for canine rabies in coyotes and grey fox rabies. Timing for newborns to be successfully vaccinated is critical. Emergency distribution in ORV sensitive areas can occur at any time of the year. Thus, an oral rabies bait/vaccine bank is required to eliminate any lapse in the ORV schedule.

Successful ORV programs in Texas continue with rabies elimination in gray foxes and maintenance of an immune barrier along the Mexican border to keep the US free of canine rabies in coyotes and gray fox rabies.

The NRMP has been level funded since 2018. The requested total funding of 35 million dollars will allow USDA to:

• Continue the enhanced rabies surveillance program including support of a Wildlife Services biologist conducting between 5,000-7,000 field rabies tests each year (8% of all rabies testing in the US).

• Implement contingency actions in response to rabid animals in sensitive areas.

• Continue Phase 1 of the NRMP, to maintain existing ORV programs to control rabies and prevent spread in wildlife populations.

• Continue the evaluation of novel and US-licensed vaccines and baits.

• Continue studies related to rabies control in skunks, mongoose, and vampire bats.

• Initiate and enhance the operations of Phase 2 of the NRMP to eliminate the raccoon rabies variant in the US

• Plan and implement a rabies bait/vaccine bank (similar in nature to the North American Foot and Mouth Disease vaccine bank) for the purpose of stockpiling oral rabies vaccines for annual and/or emergency ORV use.

RESOLUTION:
The United States Animal Health Association requests the 118th Congress to appropriate a minimum of $35 million for the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS), National Rabies Management Program (NRMP) and requests that USDA-APHIS-WS initiate the development of a critically needed oral rabies bait/vaccine bank for the NRMP.

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RESOLUTION NUMBER: 2  APPROVED AS AMENDED
SOURCE: COMMITTEE ON ONE HEALTH
SUBJECT MATTER: RECENT ANNOUNCEMENT TO DECLARE SALMONELLA AS AN ADULTERANT IN BREADED AND STUFFED RAW CHICKEN PRODUCTS (PRESS RELEASE NO. 0167.22)

BACKGROUND INFORMATION:

The United States Department of Agriculture (USDA), Food Safety and Inspection Service (FSIS) has announced that it will be declaring Salmonella an adulterant in breaded and stuffed raw chicken products. We question what, if any, impact this declaration will have on improving public health.

There are more than 2500 different serotypes of Salmonella with different degrees of virulence and pathogenicity, many of which are not fully understood at this time. Declaring Salmonella as adulterant may sound tough, when in reality the implications of such an action would bring about unnecessary economic burden to producers, processors, and also potentially disrupt the supply of poultry products which could lead to increased food costs to consumers. USDA-FSIS should refrain from declaring Salmonella an adulterant of stuffed raw chicken products because this action is unwarranted and unlikely to result in measurable reductions in the national salmonellosis incidence.

While the scope of this action is currently limited to breaded and stuffed raw chicken products, the definition of adulterant implies it is the addition of a substance to a product which is not naturally occurring. To the contrary, the poultry industry goes to great lengths applying practices and interventions to reduce the incidence of Salmonella spp in poultry at all levels both pre-harvest and post-harvest of the production chain. Further, the poultry industry carefully constructs and confirms cooking instructions so consumers know how to prepare the specific poultry item.

The range of potential sources of Salmonella is ubiquitous and includes various animal species, such as pets and mail-order poultry, as well as food products like vegetables, fruits, and meat.

RESOLUTION:

The United States Animal Health Association requests that the United States Department of Agriculture, Food Safety and Inspection Service make scientific, data-driven decisions for new Salmonella policies.

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RESOLUTION NUMBER: 3  APPROVED
SOURCE: COMMITTEE ON ANIMAL HEALTH SURVEILLANCE AND INFORMATION SYSTEMS
SUBJECT MATTER: ALLOW INTEGRATION OF ACCREDITED VETERINARIAN DATA FROM THE NATIONAL VETERINARY ACCREDITATION PROGRAM SYSTEM TO STATE ANIMAL HEALTH OFFICE DATABASE SYSTEMS

BACKGROUND INFORMATION:

Most state animal health officials (SAHOs) have electronic database systems for managing animal health information, including certificates of veterinary inspection, accession, and vaccination records, and other registration, licensing, and surveillance program records that require accredited veterinarian involvement and/or signature. SAHOs must identify and verify the accreditation status of submitting veterinarians. Furthermore, state offices must have a reliable list of accredited veterinarians to contact for important state regulatory and disease updates.

Although SAHOs are granted access to the National Veterinary Accreditation Program system, there is no convenient way to integrate that data electronically into their database.
systems. Therefore, many states keep a separate data set within their own systems for veterinary data management. This process is duplicative, creating unnecessary data entry and management work as well as decreased accuracy.

**RESOLUTION:**

The United States Animal Health Association requests that the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services provide access to data from the National Veterinary Accreditation Program system in real-time for state animal health officials and their electronic database systems that would support system-to-system integration. Accessible data should include full name, address, contact information (email, phone), and accreditation status information (national accreditation number, Level I or II, states accredited in, and expiration date).

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**RESOLUTION NUMBER: 4 COMBINED WITH 29 APPROVED AS AMENDED**

**SOURCE: COMMITTEE ON POULTRY AND OTHER AVIAN SPECIES COMMITTEE ON GLOBAL HEALTH AND TRADE**

**SUBJECT MATTER: UNITED STATES COMPARTMENTALIZATION PROGRAM RECOGNITION**

**BACKGROUND INFORMATION:**

The National Poultry Improvement Plan (NPIP) is the federal government’s poultry disease control program administered in cooperation with state animal health officials and poultry producers. The program “Compartmentalization for Protection Against Avian Influenza and/or Newcastle Disease in Primary Poultry Breeding Companies in the United States of America” (NPIP Compartmentalization) was approved by the NPIP in 2014. Poultry primary breeding companies in the United States (US) rely on the ability to export to maintain a steady global supply of breeding stock and account for over 50% of global market share for each egg-type and meat-type chicken and turkey breeders.

Compartmentalization recognition by trading partners would allow for an uninterrupted supply of breeding stock internationally even in the event of outbreaks of highly pathogenic avian influenza. Such recognition is achieved by bilateral agreements.

From the adoption of the NPIP to August 2022, only Indonesia has recognized such programs for the importation of breeding stock of poultry from the US, while Hong Kong only accepts compartmentalization for transit purposes but not importation. No other country thus far recognizes the NPIP program.

**RESOLUTION:**

The United States Animal Health Association (USAHA) urges the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) to officially engage in bilateral negotiations to establish recognition and acceptance of the National Poultry Improvement Plan compartmentalization program with our trading partners for the continuation of international trade in the event of another highly pathogenic avian influenza outbreak in the United States. The USAHA recommends negotiations be initiated through official communications from USDA-APHIS-VS’ Chief Veterinary Officer, to their counterparts in key trading partner countries, such as the United Kingdom, European Union, Canada, Mexico, Brazil, Australia, New Zealand, and Argentina.

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RESOLUTION NUMBER:  5 APPROVED  
SOURCE:  COMMITTEE ON POULTRY AND OTHER AVIAN SPECIES  
SUBJECT MATTER:  TELEHEALTH AND VIRTUAL REALITY ACCEPTANCE FOR POULTRY INSPECTIONS 
BACKGROUND INFORMATION:  
With increasing innovative technologies that allow for excellent visualization of birds/flocks, adopting acceptance of virtual reality and video technologies to perform official poultry flock inspections would improve biosecurity (making it possible to inspect multiple premises without breaching biosecurity policies in place) and sustainability (by reducing transit times and their implications) and would extend the reach of the veterinary community already experiencing a shortage of resources. This technology is effective and reliable in daily life applications and in specific and specialty fields such as human and veterinary telemedicine; however, the United States Department of Agriculture, Animal and Plant Health Inspection Services, Veterinary Services seems hesitant to officially adopt and accept its use in routine veterinary activities. 

RESOLUTION:  
The United States Animal Health Association urges the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service, Veterinary Services to officially permit the use of telehealth through virtual reality and video technology as part of accredited veterinarians’ flock inspections for health inspections and export compliance, veterinary medical officers’ inspections at import and export ports, and USDA compartmentalization audits.

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RESOLUTION NUMBER:  6 COMBINED WITH 28 APPROVED  
SOURCE:  COMMITTEE ON POULTRY AND OTHER AVIAN SPECIES  
COMMITTEE ON GLOBAL ANIMAL HEALTH AND TRADE  
SUBJECT MATTER:  HIGHLY PATHOGENIC AVIAN INFLUENZA COMPENSATION AND INDEMNIFICATION 
BACKGROUND INFORMATION:  
The United States has experienced devastating losses due to highly pathogenic avian influenza (HPAI) in 2022 with over 42 million birds affected to date (9/15/22). While the efforts addressing this animal health crisis have been exemplary by all stakeholders, continuing to ensure swift depopulation, virus elimination and surveillance is vital to lifting official control areas, and allowing continuity of trade from previously restricted areas. After 14 days since depopulation and initial virus elimination activities have been completed on the infected premises, and all required surveillance testing within the control area has been completed, the control area may be released. Delays that affect the speed of depopulation and virus elimination of infected premises increases the length of quarantines and impact the ability of states and/or regions to regain HPAI free status, which can be achieved following a minimum period of 28 days after stamping-out policy of all affected sites when surveillance requirements are met per World Organization for Animal Health (WOAH) Article 10.4.28. This, in turn, can prolong trade restrictions. Adopting policies to incentivize virus elimination of affected premises would help keep timeframes to regain freedom status closer to the 28-day timeframe as described in the Terrestrial code of the WOAH in order to minimize trade restrictions related to HPAI incidents.

RESOLUTION:  
The United States Animal Health Association urges the United States Department of Agriculture to adopt policies that incentivize virus elimination of affected premises.
Agriculture, Animal and Plant Health Inspection Service, Veterinary Services to revise highly pathogenic avian influenza (HPAI) response plans to incentivize swift establishment of initial virus elimination dates and disinfection dates for all HPAI positive premises, including backyard and commercial poultry flocks, for the purpose of minimizing disease spread and the impact of trade restrictions.

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RESOLUTION NUMBER: 7 COMBINED WITH 35 APPROVED AS AMENDED
SOURCE: COMMITTEE ON POULTRY AND OTHER AVIAN SPECIES
COMMITTEE ON ANIMAL WELFARE
SUBJECT MATTER: EUTHANASIA AND DEPOPULATION
BACKGROUND INFORMATION:
   The United States Department of Agriculture (USDA) has a history of looking to the American Veterinary Medical Association (AVMA) for guidance on the euthanasia of animals (AVMA Guidelines for the Euthanasia of Animals, available at https://www.avma.org/sites/default/files/2020-02/Guidelines-on-Euthanasia-2020.pdf) and the depopulation of animals (AVMA Guidelines for the Depopulation of Animals, available at https://www.avma.org/sites/default/files/resources/AVMA-Guidelines-for-the-Depopulation-of-Animals.pdf). However, during the 2022 highly pathogenic avian influenza outbreak, individuals trained to properly euthanize individual birds after application of a depopulation method were asked to not use an AVMA-approved euthanasia method by USDA. This created an inconsistency in the application of AVMA guidelines.

RESOLUTION:
   The United States Animal Health Association requests that the United States Department of Agriculture, Animal and Plant Health Inspection Service consistently accept the application of the American Veterinary Medical Association Humane Endings Guidelines documents (Slaughter, Euthanasia, and Depopulation) when conducting emergency response efforts in livestock and poultry.

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RESOLUTION NUMBER: 8 APPROVED
SOURCE: COMMITTEE ON POULTRY AND OTHER AVIAN SPECIES
SUBJECT MATTER: WORLD ORGANIZATION FOR ANIMAL HEALTH DEFINITION OF “POULTRY”
BACKGROUND INFORMATION:
   The intent of defining “poultry” and “non-poultry” is to specify the classes of birds that are at risk to enter into international/export markets. There have been multiple cases where birds infected with highly pathogenic avian influenza have impacted trade even though they represent no risk of entering an export market. This resolution refines the definition of “poultry” to prevent inclusion of birds that are not at risk to enter international trade.

   Currently, the World Organization for Animal Health (WOAH) defines “poultry” to mean “all birds reared or kept in captivity for the production of any commercial animal products or for breeding for this purpose, fighting cocks used for any purpose, and all birds used for restocking supplies of game or for breeding for this purpose, until they are released from captivity.” This definition of “poultry” caused export disruption of chicken and turkey products from the state of Texas after hunting preserve pheasants were diagnosed and reported as infected with highly pathogenic avian influenza.

   There have also been multiple cases of birds being classified as “poultry” when the
owners have given away small numbers of eggs to friends or neighbors. This is because the definition uses the wording “the products of which are used primarily within the same household exclusively”.

United States (US) representatives to WOAH have proposed alternative wording to exclude this class of fowl from the definition of “poultry”. The US has one vote at WOAH and must garner support from other countries to obtain majority to attain a change, and so US poultry producers should be united in this endeavor.

The United States Animal Health Association should lend support to the proposed definition of “poultry” as follows, with edits to the current WOAH definition of “poultry”.

RESOLUTION:
The United States Animal Health Association supports the proposed changes to the definition of “poultry” by the United States representative to the World Organization for Animal Health.

POULTRY

means all birds reared or kept in captivity for the production of any commercial animal products or breeding for this purpose, and fighting cocks used for any purpose, and all birds used for restocking supplies of game or for breeding for this purpose.

Birds that are kept in a single household, the products of which are used primarily within the same household, are not considered poultry, provided that they have no direct or indirect contact with poultry or poultry facilities.

Birds that are kept in captivity for other reasons, including those that are kept for shows, racing, exhibitions, zoological collections competitions pet birds, birds specifically raised for release, and for breeding or selling for these purposes, are not considered poultry, provided that they have no direct or indirect contact with poultry or poultry facilities.

RESOLUTION NUMBER: 9  APPROVED

SOURCE: COMMITTEE ON POULTRY AND OTHER AVIAN SPECIES

SUBJECT MATTER: EGG DROP SYNDROME EPIZOOTIOLOGY

BACKGROUND INFORMATION:
Egg drop syndrome (EDS) became established as a problem in Pennsylvania in 2018 with 7 confirmed cases to date. In Indiana, 52 cases have emerged since August 30, 2021, in a highly dense, two-county cage free layer area. In Michigan, a broiler breeder farm in southern Michigan became infected in September of 2022. Over 800,000 layers were depopulated in an effort to eradicate the disease, but this effort failed as unvaccinated replacement pullets, moved to previously positive houses, broke with the disease again. White egg layers are also being reported as being infected and starting to show signs of poor production.

The chicken layer industry is fearful that this virus may be spread to other states or other areas in affected states due to the lack of knowledge of the proper techniques to prevent spread such as on egg handling materials, bird movement vehicles, etc. Eggs are moved widely in the industry on reused egg handling materials onto farms where the birds
reside providing a risk of movement of EDS virus into flocks. Vaccines are not available in the United States (US) for routine use, so all egg laying chickens in the US are fully susceptible.

This EDS Atadenovirus is not easily isolated with our only tool for surveillance being the polymerase chain reaction (PCR) test or serology. PCR can detect either live or dead virus so using this means of evaluating cleaning and disinfection is not meaningful if a positive PCR result is obtained.

Specifically, the following are needs as viewed by veterinarians involved with this problem:

• A reproducible means of isolating the virus to aid in studies on virus elimination using cleaning and disinfection, effect of heat, effect of composting, stability in the environment, etc.
• Better knowledge of the effectiveness of decontamination of egg handling materials that are reused and sent onto farms – plastic flats, pallets
• Identify reservoirs of the EDS virus that may include wild birds, white egg layers, and ducks (domestic or wild)
  o Wide surveillance by PCR or serology would be helpful to determine these reservoirs.
• Identify vectors involved with spread of the disease such as insects, people, wild birds, or others
• Effective procedures for decontaminating EDS positive poultry houses

RESOLUTION:
The United States Animal Health Association urges Congress to allocate additional funds for the United States Department of Agriculture to continue researching the epizootiology of the egg drop syndrome virus to help prevent the further spread and strategies to eradicate the virus in the United States egg industry.

RESOLUTION NUMBER: 10 APPROVED
SOURCE: COMMITTEE ON FOOD AND FEED SAFETY
SUBJECT MATTER: CLARIFICATION ON LIMITATIONS TO GOVERNMENT FEED IMPORT RISK MITIGATION
BACKGROUND INFORMATION:
In 2020, Resolution #3 and #12 (Feed Import Restrictions to Protect Against African Swine Fever Importation in Feed) was passed requesting that the United States Department of Agriculture (USDA), Animal Plant Health Inspection Service (APHIS), Veterinary Services to collaborate with other government agencies to restrict the import of feed/and or feed components from countries that are positive for African swine fever (ASF) to create enforceable standards with those countries to reduce contamination during harvest and processing. An interim response was received pointing out the Food and Drug Administration (FDA) was the point of contact, that the request included all feed ingredients rather than just soy and soy products, and that the secondary impacts were too prohibitive if all feed ingredients were banned from import, although supporting details were not given. The interim response supported volunteer programs rather than government-imposed programs, even though voluntary programs have no oversight. No final response has been posted on the United States Animal Health Association resolutions page as of September 2022.

Experimental studies on the ability of contaminated feed, particularly soy and soy
products, to transmit diseases including Senecavirus A (SVA), porcine reproductive and respiratory syndrome virus, porcine epidemic diarrhea virus, pseudorabies virus, classical swine fever virus, ASF virus, foot-and-mouth disease virus (FMDV) have been done by Kansas State University, Cornell University, University of Minnesota, the USDA-Agricultural Research Service, Pipestone Applied Research, and others (Dee et al, 2014; Dee et al, 2018, Dee et al, 2021; Caserta et al, 2022; Dee et al, 2022; Stenfeldt et al, 2022). This work has been published broadly in peer-reviewed literature culminating in a special issue of feed risk in the January 2022 issue of Transboundary and Emerging Diseases. In this issue and in other recent published work it has been shown that time/temperature quarantine reduces risk of transmission from contaminated feed (Dee et al, 2022a) and contaminated feed causes widespread contamination of feed mills (Elijah et al, 2021). Finally, evidence of a SVA transmission into a previously negative country from contaminated feed was published (Dee et al, 2022b).

The risk of feed is well-recognized globally. The Canadian government undertook a collaborative effort to evaluate the cost and benefit of creating risk mitigation steps for feed imports and has since implemented a program to reduce risk from imported feed (Calvin et al, 2022). Denmark included a requirement in its Industry Products Standards to heat treat feed from ASF virus infected countries in Asia starting in July 2020 and they require import from only approved companies that are certified to meet quality standards (Agriculture and Food Sector, 2021). Australia defines imported animal feed as a high biosecurity risk on their Department of Agriculture, Fisheries and Forestry website, specifically highlighting the import risk to livestock as FMDV and poultry diseases. Australia also has guidelines for importing bulk grain from low risk areas and requirements on how the grain is grown, harvested, stored and transported (https://www.agriculture.gov.au/biosecurity-trade/import/goods/plant-products/stockfeed-supplements, Accessed August 31, 2022). The European Food Safety Agency Panel on Animal Health and Welfare has also recognized feed as risk for introduction and spread and that the risk was moderated by the source of the feed (2021). The USDA conducted a qualitative assessment and determined that feed risk ranged from negligible to moderate with high uncertainty (USDA APHIS VS CEAH, 2019). Another qualitative assessment determined the introduction of ASF via contaminated feed was moderate overall (Jones et al, 2020). Qualitative assessments are limited in their clarity and ability to assess risk designations, and quantitative measures are also limited due to varying methods of diagnostic analysis and limited laboratories testing feed (Shurson et al, 2022).

Mitigation of risk of foreign animal disease introduction requires engagement by both industry and government. To date, the US swine industry has acknowledged this threat and participated in research to evaluate feed risk, feed mitigants, and time/temperature controls. The feed import industry has also developed a responsible imports program; one example is SAM nutrition in Minneapolis, Minnesota. Efforts are also needed from the USDA and FDA like what is seen in Australia and Canada. The US government has not widely shared with members of the swine industry details about the challenges with managing risk to feed imports or what the costs would be; clarity is needed. This lack of understanding as to why action cannot be taken is despite industry participation in the Feed Risk Task Force, a letter sent to then Secretary Purdue from the National Pork Producers Council and 30 states, and the 2020 resolution.

RESOLUTION:
The United States Animal Health Association (USAHA) requests the United States Food and Drug Administration, the United States Department of Agriculture and United States Department of Homeland Security Customs and Border Protection provide a report to the USAHA Food and Feed Safety Committee by the 2023 USAHA meeting that includes a clear summary as to what industries and/or stakeholders would be impacted
by a risk mitigation program on imported soy and soy products from countries that are positive for foot and mouth disease virus, classical swine fever virus, and African swine fever virus, and how those countries would be impacted. The report should also include an assessment of the impact of the Canadian, Danish, and Australian feed risk mitigation programs and identification of components that would mitigate risk for imports into the United States. Assessments should include cost, benefits, and needs for implementation (resources, authority, etc.). Comments on how the Foreign Supplier Verification Program could be leveraged to prevent adulteration of animal feed with pathogens as is done for human pathogens should also be included.

References:


RESOLUTION NUMBER: 11 APPROVED
SOURCE: COMMITTEE ON ANIMAL EMERGENCY MANAGEMENT
SUBJECT MATTER: STRENGTHENING THE UNITED STATES ANIMAL DISEASE AND TRACEABILITY AND DISEASE PREVENTION RADIO-FREQUENCY IDENTIFICATION INFRASTRUCTURE

BACKGROUND INFORMATION:

The threat of a foreign animal disease impacting the United States (US) protein market is real and tangible, recently evidenced by the outbreak of highly pathogenic avian influenza and ongoing concern for African swine fever. A robust disease traceability system and corresponding action from states and their partners is critical to the US response in protecting our food supply, as well as domestic and export markets. While states have taken steps to improve their ability to detect and trace animal diseases, there are still significant gaps in the overall infrastructure. With a production value well over $100 billion, providing tools and resources to the states to protect the livestock industry is a top priority.

The United States Animal Health Association has advocated for funding and resources needed to maintain a robust state and federal animal health infrastructure necessary
to facilitate early detection, surveillance, response, and control activities to prevent and mitigate domestic and foreign animal diseases.

Increased funding would allow further development of radio-frequency identification infrastructure at the state level and enhance the overall US animal disease traceability system. States would be able to utilize existing Animal Disease Traceability (ADT) cooperative agreements, which are familiar platforms, to focus funding requests to meet their individual needs.

The ADT cooperative agreements establish strong standards to ensure interoperability across all participants and protection of the data collection and utilization process. While the ADT cooperative agreement program is already established, states will continue engagement with key partners within their state, including auction markets, livestock producers and processing facilities to facilitate their participation.

A strong disease traceability system is an insurance plan for our livestock industry but also assures American consumers and global trading partners that the US has a safe and sustainable food supply.

RESOLUTION:

The United States Animal Health Association requests Congress and the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services to increase funding for states to facilitate the build-out of critical Animal Disease Traceability radio-frequency identification infrastructure.

RESOLUTION NUMBER: 12  APPROVED
SOURCE: COMMITTEE ON AQUACULTURE
SUBJECT MATTER: COMPREHENSIVE AQUACULTURE HEALTH PROGRAM STANDARDS
BACKGROUND INFORMATION:

The United States Animal Health Association applauds the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services for working with the National Aquaculture Association to develop the new National Aquaculture Health Plan and Standards (NAHP&S) which incorporates and operationalizes critical components needed to support Comprehensive Aquaculture Health Program Standards. A strong national plan protects all aquatic animal health and provides a national framework for consistent inspection and testing of aquatic animals cultured in the United States, supports international trade and private and public aquaculture, and protects natural resources. The effectiveness and success of NAHP&S requires the cooperation of the aquaculture farming community and state, tribal and federal entities.

RESOLUTION:

The United States Animal Health Association (USAHA) strongly urges the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) to initiate the rulemaking process to codify the Comprehensive Aquaculture Health Program Standards in the Code of Federal Regulations as a voluntary aquatic animal livestock health management plan. Further, USAHA strongly encourages USDA-APHIS-VS to partner with other federal agencies, states, tribes, accredited veterinarians, and laboratories conducting inspections and testing to ensure consistency within the program by developing training programs.

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RESOLUTION NUMBER: 13 APPROVED  
SOURCE: COMMITTEE ON AQUACULTURE  
SUBJECT MATTER: IMPORT HEALTH REQUIREMENTS FOR LIVE AQUATIC ANIMALS  
BACKGROUND INFORMATION:  
At present, there are only United States (US) federal import health requirements for the importation of live salmonid species and their gametes (United States Fish and Wildlife Service), as well as eight cyprinid species considered susceptible to spring viremia of carp virus and four tilapia species considered susceptible to tilapia lake virus (United States Department of Agriculture). All other live aquatic animals enter the US with no federal animal health requirements. In recent years, detections of World Organization for Animal Health listed pathogens and other emerging pathogens, such as red sea bream iridovirus, infectious hypodermal and hematopoietic necrosis virus, and tilapia lake virus, have been linked to unregulated imports. The introduction of these pathogens causes livestock losses, facility quarantines, export bans, and the need for enhanced surveillance. Import controls would not be intended to ban trade but to ensure that aquatic animals entering the US are healthy and do not pose risks to domestic aquaculture production or natural resources.

RESOLUTION:  
The United States Animal Health Association (USAHA) urges the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) to act proactively to prevent the introduction of foreign aquatic animal pathogens that pose threats to the health of aquatic livestock and natural resources through untested live animal and product imports. As such, USAHA requests USDA-APHIS-VS initiate work to zone the United States (US) as free from World Organization of Animal Health (WOAH) listed pathogens that have never been detected in the US, such as salmon alphavirus, epizootic hematopoietic necrosis virus, yellowhead virus-1, and Perkinsus olseni. Further, USAHA requests USDA-APHIS-VS immediately impose import controls for those pathogens from which the US demonstrates absence, following the WOAH guidelines to demonstrate freedom.

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RESOLUTION NUMBER: 14 APPROVED  
SOURCE: COMMITTEE ON EQUINE  
SUBJECT MATTER: ADVANCING EQUINE DIAGNOSTICS AT THE UNITED STATES DEPARTMENT OF AGRICULTURE, ANIMAL AND PLANT HEALTH INSPECTION SERVICE, VETERINARY SERVICES, NATIONAL VETERINARY SERVICE LABORATORY  
BACKGROUND INFORMATION:  
The United States Department of Agriculture (USDA), Animal and Plant Health (APHIS), Veterinary Services (VS), National Veterinary Services Laboratories (NVSL) plays a critical role in protecting equine health in the United States (US) through timely reporting of results from validated diagnostic tests for equids tested at import or those tested during an epidemiologic equine disease investigation.  
The foreign animal disease testing performed by USDA-APHIS-VS-NVSL is critical to minimize the risk of introduction or spread of equine diseases such as dourine, glanders, contagious equine metritis and equine piroplasmosis (EP). Science has shown the impact of stress and transport on the equine immune system can infrequently cause a non-specific immune response and trigger a non-negative diagnostic test result. Additionally, the import disease testing methods utilized in the US have recognized limitations, which result in the non-negative test result classification. Between 2011 and 2021, USDA-
APHIS-VS-NVSL diagnostic testing results have identified 20 non-negative glanders testing imported equids and 24 non-negative dourine testing imported equids. Regardless of the reason for the non-negative test result, equids with the non-negative classification are quarantined for an extended period of time, until a negative test result is obtained. There is great impact on the health and wellbeing of the individual non-negative equids while in quarantine; especially if it is a fit performance or breeding horse.

The current gold standard of culturing for the diagnosis of contagious equine metritis poses challenges to timely release of equids from quarantine. Although *Taylorella (T.) equigenitalis* colonies are typically visible 72 hours after plating of a positive sample, in some situations it may take up to a week for colonies to appear. Thus, tests are not confirmed negative until day 7. International research has shown, a rapid, robust confirmatory test, such as the polymerase chain reaction (PCR) test, that does not have as stringent sample transport requirements as when submitting swabs for culture, would be highly beneficial to state animal health officials and diagnosticians. A validated PCR test would be a more economical, quicker means of screening stallions for the carrier state than conventional culture. The PCR assay for *T. equigenitalis* requires additional research to ensure that it is fully validated for the determination of the status of stallions, mares and geldings based on screening swabs and perhaps others.

USDA-APHIS-VS-NVSL has advanced the diagnostic testing capabilities for equine piroplasmosis over the years to enable the identification of acute recent infection and chronic infection. However, the identification of EP-positive horses has increased the need to identify the genotypic strains of organisms in positive EP equids detected in the US. While years of surveillance has shown that natural, endemic transmission of EP is not currently known to be occurring in the US, a small number of EP positive horses are found every year in two main high-risk groups: 1) Quarter Horse racehorses infected by iatrogenic transmission, many with ties to unsanctioned racing, and 2) horses illegally moved into the US from EP-endemic countries via Mexico. Strain-typing of EP organisms in these cases would identify and confirm epidemiological links between cases to be detected. Currently, however, there is no validated method to determine different strains of each EP organism (*Theileria equi* and *Babesia caballi*) complicating the epidemiological and trace back investigations.

Thus, advances in diagnostic testing for equine foreign animal diseases at the USDA-APHIS-VS-NVSL is essential to protecting and promoting the health of the nation’s equine population.

**RESOLUTION:**

The United States Animal Health Association (USAHA) urges the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS), National Veterinary Services Laboratory (NVSL) to devote the resources necessary to further pursue advancing the diagnostic tests for dourine and glanders. Furthermore, USAHA urges USDA-APHIS-VS-NVSL to continue to pursue the development and validation of the polymerase chain reaction test for contagious equine metritis and the genotyping capabilities for equine piroplasmosis organisms.

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**RESOLUTION NUMBER: 15 APPROVED**

**SOURCE: COMMITTEE ON EQUINE**

**SUBJECT MATTER: CONTAGIOUS EQUINE METRITIS TEST RESULT REPORTING**

**BACKGROUND INFORMATION:**

During post-import quarantine for contagious equine metritis (CEM), complement fixation (CF) testing is required for all imported mares and test mares bred to imported stallions. The CEM CF testing of test mares is the last step in the quarantine procedures
for imported stallions, and receipt of official CF results is often the last requirement for the release of imported stallions from quarantine.

Beginning in 2021, the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services, National Veterinary Services Laboratory began releasing unofficial preliminary results, watermarked as “Preliminary Results” to CEM facility owners at their request. These preliminary results are released manually by laboratory staff directly to facility owners, and the inclusion of state animal health officials (SAHOs) has been inconsistent, leading to regulated facilities having access to results prior to the regulatory officials responsible for oversight of the quarantine process, as well as results being sent by regulated facilities to SAHOs outside of normal channels.

In some instances, preliminary release of results has led to pressure on SAHOs to release stallion quarantines prior to their receipt of official CF results. The release of preliminary results has also been inconsistent among facilities and SAHOs, leading to differences among facilities in different states, based on how SAHOs release quarantines on imported horses. Only official complete results should be utilized for quarantine release, thus making preliminary negative results unnecessary.

RESOLUTION:

The United States Animal Health Association urges the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services, National Veterinary Services Laboratory to only release test results required during post-import quarantine for contagious equine metritis in their final format, through official release channels.

RESOLUTION NUMBER: 16  APPROVED
SOURCE: COMMITTEE ON EQUINE
SUBJECT MATTER: CONTAGIOUS EQUINE METRITIS TRAINING
BACKGROUND INFORMATION:

The success or failure of the Contagious Equine Metritis (CEM) Import Quarantine Program is solely dependent on proper implementation of the prescribed quarantine, animal management and testing procedures by state/federal animal health officials in the CEM-approved states. Proper implementation is achievable only if knowledgeable, technically trained and qualified individuals provide day-to-day regulatory program oversight.

Previously, United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services provided the critical in-person training course necessary for designated states CEM coordinators. The hands-on component provided essential training on the proper sample collection and treatment techniques required by the United States Code of Federal Regulations. This is the only training course which ensures clinical competency of those overseeing the CEM programs in the states. With the increased number of newly appointed CEM coordinators across the country, there is an immediate need for the training courses to be resumed.

RESOLUTION:

The United States Animal Health Association (USAHA) urges the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) to provide at a minimum in-person hands-on training for contagious equine metritis (CEM) state coordinators every two years and develop an introductory training module for orienting new CEM coordinators. Furthermore, USAHA urges USDA-APHIS-VS to require that the state-designated CEM coordinator complete the introductory training module within the first year of position appointment and attend
the in-person training at the first available opportunity. Such training requirements shall be incorporated into the state-federal CEM Memorandum of Understanding.

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RESOLUTION NUMBER: 17 APPROVED
SOURCE: COMMITTEE ON EQUINE
SUBJECT MATTER: EQUINE ISSUES WORKSHOP
BACKGROUND INFORMATION:

Early in 2010, Dr. John Clifford, the Deputy Administrator of Veterinary Services (VS) in the Animal and Plant Health Inspection Service (APHIS) of the United States Department of Agriculture (USDA), and Jay Hickey, President of the American Horse Council, agreed to co-host a workshop on equine infectious disease control and prevention. The invitation for this meeting in 2010 stated “The emergence of a major equine infectious disease can have dramatic consequences for the horse industry. Such outbreaks have occurred with some frequency over the last several years. These outbreaks have impacted many individuals and groups involved with the equine industry and have also required USDA-APHIS-VS and state animal health officials to spend a great deal of money and staff time to identify the diseases, trace the horses potentially affected, and contain the disease.”

Looking back over the last 12 years, while much has been accomplished, there continues to be an increase of equine disease outbreaks that have required a regulatory response including the 2011 multi-state equine herpesvirus myeloencephalopathy outbreak and marked increase in the detection of horses dually infected with equine piroplasmosis and equine infectious anemia in the United States due to iatrogenic transmission of the causative agents. State and federal animal health officials, academia and various equine stakeholders have undertaken many initiatives regarding equine infectious diseases and biosecurity over the last ten years. Despite these excellent actions, there has been limited collaboration and communications regarding these efforts amongst these groups. Bringing all entities together for a workshop for strategic planning on efforts to protect the United States equine herd from infectious diseases would be extremely beneficial to advancing equine health.

RESOLUTION:

The United States Animal Health Association urges the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) and American Horse Council (AHC) to co-host an in-person equine issues workshop in 2023/2024 for state animal health officials, federal animal health officials, equine-focused academic subject matter experts and equine industry organization representatives. USAHA further requests that USDA-APHIS-VS provide financial and personnel resources for the workshop and AHC provide administrative assistance.

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RESOLUTION NUMBER: 18 APPROVED
SOURCE: COMMITTEE ON EQUINE
SUBJECT MATTER: FEDERAL AUTHORITIES TO TAKE ACTION ON UNSANCTIONED HORSE RACING
BACKGROUND INFORMATION:

Since 2008, at least 382 cases of equine infectious anemia and 532 cases of equine piroplasmosis have been confirmed in racing Quarter Horses, most with epidemiological links to unsanctioned racing. State and federal animal health officials and equine industry groups have been challenged to rectify the problems observed in this segment of the
industry including the personal safety risks associated with entering these venues. The problems are clearly articulated in the August 6, 2022, Washington Post Article by Gus Garcia-Roberts, titled “A horse track with no rules. On-track drug injections, shock devices and a dead jockey: A “bush track” in Georgia is one of dozens that profit outside the reach of regulation.” (https://www.washingtonpost.com/sports/2022/08/05/bush-track-horse-racing-georgia/)

The illegal activities identified, and in some cases, pictorially evidenced include illegal gambling, racing, and selling of drugs, inappropriate carcass disposal, administration and use of narcotics in humans and animals, and mistreatment of the horses. State animal health officials would benefit from a response by federal entities with authorities over these and other identified criminal activities.

Additionally, implementation and enforcement of federal-level regulations prohibiting unsanctioned horse racing would protect and promote equine health in the United States.

RESOLUTION:

The United States Animal Health Association (USAHA) urges the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services to collaborate with state and other federal authorities to address the health and welfare of equine in unsanctioned racing as well as illegal activities associated with the events.

Furthermore, USAHA urges equine industry stakeholders such as the American Horse Council, the American Quarter Horse Association, and the American Association of Equine Practitioners to pursue federal legislation to prohibit unsanctioned equine racing.

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RESOLUTION NUMBER: 19 APPROVED
SOURCE: COMMITTEE ON EQUINE
SUBJECT MATTER: NATIONAL ANIMAL HEALTH MONITORING SYSTEM EQUINE STUDY
BACKGROUND INFORMATION:

The National Animal Health Monitoring System (NAHMS) program unit conducts national studies on the health and management of United States domestic livestock and poultry populations. These studies are designed to meet the information needs of the industries associated with these commodities, as identified by people within those industries. NAHMS equine studies conducted in 1998, 2005 and 2015 provided extremely beneficial data and analysis to the equine industry and state animal health officials (SAHOs).

The equine industry has recognized an increasing number of equine domestic infectious disease outbreaks (strangles, equine herpesvirus, equine influenza, and arboviruses) and the increasing risk for incursion of foreign animal diseases such as equine piroplasmosis, contagious equine metritis, and African horse sickness. The equine industry believes the recent change in equine demographics, equine health care, interstate and international movement patterns and biosecurity practices could have an impact on future disease prevention and control efforts. Therefore, industry and SAHOs recognize the critical need for a new NAHMS study to be conducted to define these changes and potential impacts.

RESOLUTION:

The United States Animal Health Association (USAHA) urges the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services to devote the resources necessary so that the National Animal Health Monitoring System can conduct an equine study within the next 5 years. Furthermore, USAHA requests state, federal and industry stakeholder participation in study needs assessment, study design and implementation.
RESOLUTION NUMBER: 20  APPROVED
SOURCE: COMMITTEE ON SWINE
SUBJECT MATTER: AFRICAN SWINE FEVER 72-HOUR NATIONAL MOVEMENT STANDSTILL

BACKGROUND INFORMATION:

The current draft United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) African swine fever (ASF) 72-Hour National Movement Standstill requirements are copied below.

“For a period of 72 hours, effective [XXX xx, XXXX, XX:00 a./p.m. Eastern Standard/Daylight Time, the intrastate and interstate transportation of the following, from any location in the contiguous United States, is prohibited:

- Live swine of any kind (including pets such as miniature pigs or potbellied pigs); Swine semen; or Swine embryos.
- All live swine that are in intrastate and interstate commerce at the start of the movement standstill must reach a destination and not be stopped on the road. Livestock in transit refers to livestock loaded in vehicles that have departed the point of loading, or held in a livestock market.
- Swine arriving to slaughter establishments may be slaughtered provided they pass Food Safety and Inspection Service (FSIS) antemortem inspection.
- Live swine in transport to Canada will not be permitted to cross the border and should return to point of origin.
- Germplasm swine semen and embryos in interstate commerce must reach a destination.
- Interstate commerce of FSIS-inspected pork and pork products is not affected.

Producers and transporters who disregard this order may be subject to civil penalties and may have additional requirements (hold order, quarantine, permitting or other restrictions for movement of pigs) placed on their premises by State or Federal animal health officials.”

One of the key aspects of the standstill order is to stop further spread of ASF while attempting to find additional cases. It is important to continually review the requirements of the standstill order.

Swine semen and swine embryos (germplasm) originates in the most bio-secure facilities within the swine industry. A movement standstill on germplasm will result in negative production consequences that are not offset by decreased risk of ASF spread. The University of Minnesota is currently finalizing a risk assessment that demonstrates the risk status of boar studs.

Removal of dead stock from a facility is a critical element that can spread disease from site to site. Since ASF can cause mortality and remains viable in dead tissue, removing dead stock from one facility and moving it to another greatly increases the risk of spreading ASF.

In the United States, feral swine are sedentary, non-migratory wild animals that live within established geographical home ranges. As such, detection of ASF in feral swine will have local transmission risk versus a national threat. In addition, feral swine are not part of normal swine production systems or networks.

RESOLUTION:

The United States Animal Health Association (USAHA) recommends the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) consider the following policy changes to the USDA-APHIS-VS
African swine fever (ASF) 72-Hour National Movement Standstill:

- Remove swine semen and swine embryos (swine germplasm) from National Movement Standstill requirements.
- Add the prohibition of deadstock movement off premises to the requirements.
- Remove a detection of ASF in feral swine as a trigger for a National Movement Standstill; rather, address a detection in feral swine only with establishment of a control area or appropriate geographic zone.

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RESOLUTION NUMBER: 21 APPROVED
SOURCE: COMMITTEE ON SWINE
SUBJECT MATTER: AFRICAN SWINE FEVER HOUR 73: PLANNING OPTIONS FOR RESUMPTION OF MOVEMENT FOLLOWING 72-HOUR NATIONAL MOVEMENT STANDSTILL

BACKGROUND INFORMATION:

In any one day, the swine industry moves over a million pigs. If African swine fever (ASF) was introduced into this scenario, it could be distributed across the United States in a very short period of time. Upon the initial introduction of ASF, the current policy is to institute a 72-hour standstill order.

The 72-hour standstill is intended to accomplish several goals:

- Stop movements to slow any further spread of disease.
- Allow producers and other entities involved with production, time to address biosecurity and if any changes are needed after movement resumes.
- Allow regulatory officials time to do epidemiological tracing on the infected premises and identify the appropriate control areas to establish when the 72-hour standstill expires.

It is also understood that a standstill order will create other consequences. The COVID-19 pandemic provided the lesson that we can stop movement, but it must be resumed as soon as possible to not create a significant cascade of negative impacts on swine production sites.

RESOLUTION:

The United States Animal Health Association recommends the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services adopt the following policy changes to minimize negative consequences of the 72-hour National Movement Standstill.

Hour 73 Swine Slaughter Establishments in Free Areas

After the 72-hour National Movement Standstill, at Hour 73, slaughter establishments in the Free Area should be removed from any extended national standstill order and be allowed to resume operations.

Hour 73 Scenarios for Production Premises (dependent upon circumstances of the outbreak)

- Continue National Movement Standstill for an additional period beyond hour 73 exempting swine movement to slaughter establishments in free areas.
- End the 72-hour National Movement Standstill at Hour 73.
RESOLUTION NUMBER: 22 APPROVED
SOURCE: COMMITTEE ON SWINE
SUBJECT MATTER: REQUEST FOR THE UNITED STATES DEPARTMENT OF AGRICULTURE (USDA), ANIMAL AND PLANT HEALTH INSPECTION SERVICE (APHIS), VETERINARY SERVICES (VS) TO DEFINE WHEN AUTHORIZATION OF INDEMNITY FOR DEPOPULATION WILL BE APPROVED BY USDA-APHIS-VS DURING A FOREIGN ANIMAL DISEASE OUTBREAK THAT INVOLVES AFRICAN SWINE FEVER

BACKGROUND INFORMATION:
Policy development during a foreign animal disease outbreak is difficult. It will require time and input from many stakeholders. During an African swine fever (ASF) outbreak, it is critical to detect and respond quickly to cases of ASF.

Confirmation of cases by the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) National Veterinary Services Laboratory (NVSL) is critical to safeguard against a false positive and responding inappropriately. It is important for USDA-APHIS-VS to confirm the presence of ASF in each state or territory.

Confirmation of cases by USDA-APHIS-VS-NVSL does, however, slow down USDA-APHIS-VS authorization of indemnity for depopulation.

Diagnostic testing is conducted at one of the National Animal Health Laboratory Network (NAHLN) laboratories approved for ASF testing and confirmed at the USDA-APHIS-VS-NVSL Foreign Animal Disease Diagnostic Laboratory/USDA-APHIS-VS-NVSL. Confidence in NAHLN comes from the oversight and testing proficiencies required by USDA-APHIS-VS. In addition to NAHLN diagnostic laboratory testing, field responders will provide objective assessments of ASF clinical signs for disease observed during investigations for each affected premises in outbreaks.

RESOLUTION:
The United States Animal Health Association (USAHA) requests that the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) adopt the following policy regarding indemnification prior to an outbreak:

During an African Swine Fever (ASF) outbreak, the USDA-APHIS-VS authorization for indemnity to depopulate the first detected case within a state or territory will require confirmation by the USDA-APHIS-VS National Veterinary Services Laboratory (NVSL). The USDA-APHIS-VS authorization for indemnity to depopulate any subsequent cases
in a state or territory will not need to be confirmed by USDA-APHIS-VS-NVSL but will require: 1) ASF non-negative or presumptive positive result at an approved National Animal Health Laboratory Network laboratory, and 2) determination of clinical signs compatible for ASF on the affected premises. Detected cases would include feral and domestic swine.

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RESOLUTION NUMBER: 23 APPROVED 
SOURCE: COMMITTEE ON SWINE 
SUBJECT MATTER: POLICY REGARDING RESTOCKING REQUIREMENTS AND ELIGIBILITY FOR INDEMNITY OF PREMISES IN A CONTROL AREA DURING AN AFRICAN SWINE FEVER OUTBREAK 
BACKGROUND INFORMATION:
Policy development during a foreign animal disease (FAD) outbreak is difficult. It requires valuable time and input from many stakeholders. It is imperative that producers and state and federal regulatory officials work together prior to an African swine fever (ASF) outbreak and do as much planning as possible.
Recent policy was implemented by the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) during the 2022 highly pathogenic avian influenza (HPAI) outbreak that required a premises in the buffer zone to submit a biosecurity plan and have a virtual audit performed by either a state or federal regulatory official to be eligible for indemnity if the premises subsequently became infected with HPAI. Premises in the infected zone were not eligible for indemnity from USDA-APHIS-VS if the state allowed restocking.

RESOLUTION:
The United States Animal Health Association requests that the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services define African swine fever (ASF) response policy regarding restocking of premises in control zones, specifically the infected and buffer zones, and for any control areas established by the detection of ASF in feral pigs (which will have extended control area times) and determine prior to an ASF outbreak what policies will be applied.

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RESOLUTION NUMBER: 24 APPROVED 
SOURCE: COMMITTEE ON SWINE 
SUBJECT MATTER: ADOPTING DRAFT NATIONAL STANDARDIZED GUIDELINES FOR HARVESTING ESTABLISHMENTS PRIOR TO AN AFRICAN SWINE FEVER OUTBREAK 
BACKGROUND INFORMATION:
It is imperative that producers, state regulatory officials, and federal regulatory officials adopt national standardized guidelines for harvesting establishments prior to an African swine fever outbreak. Specifically, guidelines are needed for harvesting establishments that are infected/contaminated premises, a contact premises, or a premises in a control area.
The draft guidelines for harvesting establishments are available through the Committee on Swine.

RESOLUTION:
The United States Animal Health Association requests the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services recognize
and consider adopting the draft guidelines developed by the Harvesting Establishment Working Group for harvesting establishments.

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RESOLUTION NUMBER: 25 APPROVED AS AMENDED
SOURCE: COMMITTEE ON SWINE
SUBJECT MATTER: DEPOPULATION RESPONSE TIME OF AN INFECTED PREMISES WITH AFRICAN SWINE FEVER

BACKGROUND INFORMATION:
Depopulation of premises infected with African swine fever is one of the key foundational pieces to controlling the spread of the disease. Delayed response time to depopulation increases the number of animals on the premises that become infected, increases the risk of disease spreading to another site, and increases the amount of virus that needs to be eliminated from the facilities. Recent experiences with highly pathogenic avian influenza support that rapid depopulation is key in slowing the spread of disease. Depopulation must balance the need to react rapidly, ensuring safety to all involved, and the method of depopulation is selected appropriately. Operational resources and the challenges of depopulation in domestic swine premises must all be considered.

RESOLUTION:
The United States Animal Health Association urges the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) to consider incorporating policy that domestic swine premises infected with African swine fever (ASF) be depopulated as soon as possible with depopulation being completed within 15 days of ASF* detection. The allowance of up to 15 days recognizes that swine premises range in size from a few pigs to tens of thousands of pigs, depopulation needs to be done as humanely as possible with consideration for human health and safety, and legal disposal requirements may require depopulation to be extended.

*ASF detection is defined as part of this policy consideration as either a USDA-APHIS-VS National Veterinary Services Laboratory confirmation of the first infected premises in a state or territory, or a National Animal Health Laboratory Network presumptive positive combined with clinical signs on subsequently infected premises in the same state or territory.

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RESOLUTION NUMBER: 26 APPROVED
SOURCE: COMMITTEE ON SWINE
SUBJECT MATTER: ESTABLISH NATIONAL STANDARDIZED PERMITTING GUIDANCE FOR AN AFRICAN SWINE FEVER OUTBREAK PRIOR TO THE OUTBREAK

BACKGROUND INFORMATION:
Developing national standardized permitting requirements during an African swine fever (ASF) outbreak will be difficult to achieve and will take a considerable amount of time. Time at the beginning of an outbreak will be needed to manage the disease response and not develop protocols. It is imperative that producers, state regulatory officials, and federal regulatory officials work together, prior to an ASF outbreak, to establish the core principles of the testing and permitting requirements. It is understood that permitting is done at the state animal health official level and can vary, but it is to all stakeholders’ benefit and responsibility to create consistency and transparency.
RESOLUTION:
The United States Animal Health Association (USAHA) requests the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) to:

1. Publish specific information regarding testing and permitting for control areas for an African swine fever outbreak on a USDA-APHIS-VS web page.
3. Recognize the USAHA Committee on Swine, or its designated sub-committee, to review, no less than annually, the document titled “Draft African Swine Fever National Standardized Permitting Guidance for Control Areas”. The USAHA Committee on Swine, or its designated sub-committee, will consult with individuals with subject matter expertise to update the document.

RESOLUTION NUMBER: 27  APPROVED
SOURCE: COMMITTEE ON SWINE
SUBJECT MATTER: UNITED STATES DEPARTMENT OF AGRICULTURE PLAN FOR A COORDINATED RESPONSE TO THE FIRST OUTBREAK OF JAPANESE ENCEPHALITIS VIRUS IN PIGS IN THE UNITED STATES
BACKGROUND INFORMATION:
Since late 2021 and early 2022, Australia has been experiencing an outbreak of Japanese encephalitis virus (JEV) infection in pigs and people. Estimates are that there has been an average production loss of approximately 6% of the national herd with some estimates being as high as 10%. Forty confirmed and suspected human cases with six fatalities have been associated with the outbreak.

JEV is a vector-borne disease, spread by Culex spp. and potentially other mosquitoes. The reservoir hosts are currently thought to be egrets and other like waterfowl although research to confirm is ongoing. Pigs are an amplifying host of the virus.

The current United States Department of Agriculture FAD PReP document is “Disease Response Strategy – Japanese Encephalitis” and, according to the document, “. . . is intended to provide animal health emergency responders with the information necessary to respond to JE, should it enter the United States . . as well as control and eradication strategies.” Those control and eradication strategies include stamping out within 24 hours of a premises being identified as infected, trace back and trace forward for at least 42 days, and quarantine and movement controls, among others. All which may be appropriate for animal to animal and fomite spread pathogens but may not be for vector-borne pathogens like JEV. An urgent review of the guidelines presented in the document is needed for response preparation should JEV enter the United States.

RESOLUTION:
The United States Animal Health Association requests the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services to work with industry, state animal health officials, and other stakeholders to review “Disease Response Strategy – Japanese Encephalitis” and update and revise it where appropriate to reflect current science and contemporary global experience with a Japanese encephalitis virus outbreak. This should be completed by March 1, 2023, in preparation for the American Association of Swine Veterinarians 2023 annual meeting.
RESOLUTION NUMBER: 30  APPROVED
SOURCE: COMMITTEE ON WILDLIFE
SUBJECT MATTER: CHRONIC WASTING DISEASE CARCASS DISPOSAL
   DUMPSTER MANAGEMENT AND BIOSECURITY

BACKGROUND INFORMATION:
State and tribal wildlife agencies may identify collection points (dumpsters) within an
identified chronic wasting disease (CWD) management zone for the disposal of hunter-
harvested cervid carcasses to remove potentially infected carcasses off the landscape
for disposal by an approved method (Gillin & Mawdsley, 2018, chap.14). However,
depending on their placement and maintenance these dumpsters could potentially
increase the risk of CWD transmission.

In several different states, photographic evidence has shown dumpsters in state
identified CWD management zones overflowing with deer carcasses and limbs scattered
on the land nearby. This could provide an opportunity for scavengers to potentially move
infected carcass material to non-infected zones or increase contamination of the ground
material around the dumpster’s location.

Federal guidance does not explicitly address uniform standards for collection
locations for carcasses of free-ranging cervids; however, the United States Department
of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services Program
Standards on CWD outlines procedures for carcass disposal, equipment sanitation, and
decontamination of premises for captive cervid facilities.

RESOLUTION:
The United States Animal Health Association urges the Association of Fish and
Wildlife Agencies (AFWA), Wildlife Health Committee to further refine the AFWA Technical
Report on Best Management Practices for Prevention, Surveillance, and Management of
Chronic Wasting Disease; Chapter 14, Carcass Disposal to address the placement and
management of chronic wasting disease carcass disposal dumpsters or other carcass
collection containers.

Reference:
   on Best Management Practices for Surveillance, Management and Control of
   Chronic Wasting Disease. Association of Fish and Wildlife Agencies, Washington,
   D. C. 111 pp.

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RESOLUTION NUMBER: 31  APPROVED
SOURCE: COMMITTEE ON FARMED CERVIDAE
SUBJECT MATTER: PROXIMITY BARRIERS FOR INTERSTATE
   MOVEMENT OF FARMED CERVIDAE

BACKGROUND INFORMATION:
The goal of the United States Department of Agriculture (USDA), Animal and Plant
Health Inspection Service (APHIS) National CWD Voluntary Herd Certification Program,
located in (9 Code of Federal Regulations Parts 55 & 81) is to provide a consistent
national approach to control the incidence of chronic wasting disease (CWD) in farmed
cervids and prevent the interstate spread of CWD. Farmed cervid herds must participate
in the program and be certified to move animals interstate.

Some state regulatory officials governing interstate movement are utilizing their own
authority to prohibit entry if the herd originates from an area within a specific proximity to a
known CWD discovery in the free-ranging herd. Such guidance on proximity exclusions is
not included in the CWD Federal Rule or the APHIS Program Standards.

State restrictions are inconsistent with examples showing mileage restrictions of 10 miles, 25 miles or 50 miles from a known CWD diagnosis or a herd’s location in relation to the home county, adjacent county or state.

The farmed cervid industry agreed to a federal layer of regulation aimed for consistency but the recent state action wanes the usefulness of the federal rule. Farmed cervid herds with more than twenty years of monitoring status and hundreds of post-mortem CWD non-detected samples are being restricted based on local environment status.

Such interstate movement restrictions are not based on peer-reviewed science that demonstrates specific range impacts of free-ranging discovery of the same cervid in relation to a farmed herd, specific range impacts of free-ranging discovery of a different cervid species in relation to a farmed herd, time elapsed since the free-ranging discovery and impacts to herds residing in double fenced facilities.

RESOLUTION:

The United States Animal Health Association urges state animal health officials and/or state wildlife officials that govern state import requirements of farmed cervidae to use proximity restrictions based off best available science and the science be made publicly available.

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RESOLUTION NUMBER: 32 APPROVED
SOURCE: COMMITTEE ON CATTLE AND BISON
SUBJECT MATTER: STANDARDIZATION OF STATE CATTLE AND BISON IMPORT REQUIREMENTS REGARDING BRUCELLOSIS

BACKGROUND INFORMATION:

The United States (US) cattle and bison herds met the World Organization for Animal Health (WOAH) standards to establish freedom from brucellosis (Brucella abortus) infection in 2008. The last reservoir for Brucella abortus in the US is the elk and wild bison herds in the Greater Yellowstone Area (GYA), where the state borders of Wyoming (WY), Montana (MT), and Idaho (ID) join.

The WY, MT, and ID state animal health officials (SAHOs), state and federal wildlife management agencies, and the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) established their respective Designated Surveillance Area for Brucellosis (DSAs) in 2010 based on the distributions of seropositive elk and bison, and those agencies continue to monitor and adjust the DSAs based on known distributions. Implementation of the states’ DSA programs involves brucellosis transmission control through temporospatial separation of livestock and wildlife, and robust surveillance measures within their respective DSAs to minimize the risk of brucellosis transmission and rapidly detect and contain the disease when transmission does occur. The USDA-APHIS-VS ruminant health staff critically review each state’s DSA activities on a rotating, triennial basis (most recent reviews: WY – 2020, ID – 2021, MT – 2022 in progress).

In 2014, USDA-APHIS-VS, Center for Epidemiology and Animal Health (CEAH) released a report of a formal assessment (Portacci et al. 2014) that estimated the risk of brucellosis escape from the combined DSAs to be 0.027 per year (roughly interpretable as an escape expected every 37 years). The USDA-APHIS-VS-CEAH assessment also evaluated the costs and benefits of post-movement requirements and found that the costs of those requirements exceed the costs of outbreak responses near the end of the brucellosis eradication campaign and far exceed the costs of spillover containment responses conducted by ID, MT, and WY.

Currently, 12 states impose additional brucellosis requirements on cattle from parts
of or all of ID, MT, and WY. These requirements impose costs and logistical complexities on commerce not justified by risk assessments and cost benefit analyses. To date, all brucellosis detections have demonstrated exposure within DSA boundaries and have been detected prior to entry into interstate commerce. Since the inception of the DSAs in 2010, most brucellosis spillover to domestic livestock has been detected prior to shedding by infected animals. Triennial review of state brucellosis programs by USDA-APHIS-VS has failed to find significant deficits.

RESOLUTION:
In the absence of significant program deficits found during the triennial review process, the United States Animal Health Association urges state animal health officials to eliminate state and region-specific brucellosis import requirements for cattle and bison beyond assurance that shipments meet state of origin Designated Surveillance Area requirements.

RESOLUTION NUMBER: 33  APPROVED
SOURCE: COMMITTEE ON CATTLE AND BISON
SUBJECT MATTER: CATTLE CONTACT TRACING SYSTEM

BACKGROUND INFORMATION:
Animal health officials across the United States (US) are tasked with protecting the cattle industry. Animal disease traceability (ADT) is a critical component to mitigating potentially economic significant diseases that could be detrimental to normal business operations. Traces are routinely conducted by animal health officials on cattle to mitigate potential disease spread. Traditional components of ADT have limited animal health officials to effectively perform a quick traceback and subsequent response time. Current ADT tools that are available for animal health officials allow for a limited trace on a current animal forward and backward (bookend tracing). Additional contacts during a trace can be determined throughout the process. However, with the current information flow, these close contacts may take additional time that could hinder a response which could be economically detrimental to the industry in the case of a potential foreign animal disease such as foot and mouth disease.

In early 2018, Kansas cattle producers led an effort that resulted in the CattleTrace pilot project which began work to develop a purpose-built infrastructure to track cattle movement through the supply chain (contact tracing) to collect the minimal data necessary for contact tracing. The data points include an individual animal identification (ID) number, a GPS location, and date and time of the read to track animals in the event of a disease outbreak. Tag readers were located at producers’ operations, livestock markets, feed yards and beef processors. The pilot project was a collaborative partnership between the state of Kansas, United States Department of Agriculture (USDA), and producer stakeholders.

The goal for the pilot project was to:
- Develop a purpose-built infrastructure for a contact traceability system,
- Evaluate the infrastructure,
- Determine the value proposition of the system at each production segment and across the industry.

Simultaneously, multiple other states including Florida, Texas, and Kentucky conducted pilot projects with collaborative funding from USDA, Animal and Plant Health Inspection Service. Project objectives ranged from testing effectiveness of both forms of radio frequency identification (RFID) along with different forms of RFID identification, such as ultra-high frequency backtags.
In January 2020, these efforts from major beef producing regions announced a partnership to form US CattleTrace, a stand-alone, non-profit organization solely focused on animal disease contact traceability. Today, the goal is to develop a national infrastructure for disease contact traceability used by state and federal animal health officials fed by private industry’s use of the infrastructure for individualized management practices. The organization aims to continue pursuing a voluntary, hands-free, speed of commerce contact tracing system. The organization will utilize the most current forms of ID that allow for the animal disease traceability system to operate at the speed of commerce within multiple segments of the cattle industry.

State and federal animal health officials’ continued support of RFID tags and collaboration with industry directed at utilization of a contact tracing infrastructure would directly enhance animal disease traceability efforts of cattle on a national level for a quick, accurate and timely response.

Additionally, sharing of existing contact trace data (ID, time, date, location) by individual state and federal animal health officials with contact tracing systems such as US CattleTrace would serve to expand the database size and geography enhancing the effectiveness and accuracy of contact traces.

RESOLUTION:

The United States Animal Health Association urges state animal health officials and the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services to work with industry to enhance cattle contact tracing efforts for economically significant diseases through collaboration and sharing of current cattle contact traceability data. This data should utilize and grow the cattle contact trace infrastructure in which readers can collect and share the critical datapoints (ID, Time, Date & GPS Location).

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RESOLUTION NUMBER: 34 APPROVED
SOURCE: COMMITTEE ON FOREIGN AND EMERGING DISEASES
SUBJECT MATTER: POLICY DEVELOPMENT NECESSARY FOR THE IMPORTATION AND USE OF POINT OF CARE ASSAYS

BACKGROUND INFORMATION:

The 2021 Joint National Animal Health Laboratory Network (NAHLN) and National Animal Disease Preparedness and Response Program (NADPRP) funding targeted six projects supporting the development and/or evaluation of point-of-care (POC) diagnostic tests to enhance the nation’s ability to quickly detect high-consequence foreign animal diseases (FADs) and accelerate response and containment efforts. POC assays for high-consequence FADs support laboratories in disease outbreak response, however, many of these potentially useful FAD POC assays have been developed for use in other countries but have not been tested or validated for use in the United States. There is a well-defined process in the 9 Code of Federal Regulations (CFR) part 104 for obtaining permits for importation of biological products, including POC diagnostic test kits. This process must “reasonably ensure that the product is pure, safe, potent, and efficacious”. This process can be lengthy and expensive. It is not conducive to rapid approval for emergency use. However, 9CFR part 106.1 provides provisions for exemption of those requirements:

“The Administrator may exempt any biological product from one or more of the requirements of this subchapter if he determines that such product will be used by the Department or under the supervision or control of the Department in the prevention, control or eradication of animal diseases in connection with (a) an official USDA program; or (b) an emergency animal disease situation, or (c) a USDA experimental use of the product.”
Policies should be developed and implemented to ensure a national framework that quickly allows for importation, evaluation, and use of POC diagnostic assays. Additionally, policies should be in place stating when, where, and by whom POC diagnostics will be used, how results will be reported, and what actions will be taken related to POC diagnostic test results.

RESOLUTION:
The United States Animal Health Association urges the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) to develop and implement policies which enable rapid exemption according to 9 Code of Federal Regulations (CFR) Part 106.1 of selected point-of-care (POC) assays from the 9 CFR Part 104 requirements for Permits for Biological Products. Policies should also be developed that address when, where, and by whom POC assays would be used, how those performing assays will be trained, and how POC test results will be reported and used.

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The Committee met during the 2022 Annual Meeting in Minneapolis, Minnesota on October 11. There were members and guests present virtually, along with 44 members and 36 guests present in-person.

The Committee reviewed the mission statement, past resolutions, and discussed planning for quarterly meetings in 2023. We are tentatively planning for three quarterly meetings (January, April, and August) to prepare for the next annual meeting in October 2023. We intend to focus on specific topics during the quarterly meetings, including operationalizing one health, brucellosis, and prion diseases.

Presentations and Reports

One Health: Improving Animal, Human and Environmental Health
Cheryl Stroud, One Health Commission

Dr. Stroud outlined the scope and complexity of One Health internationally, and highlighted the work the One Health Commission does in promoting and operationalizing One Health. Dr. Stroud posed fundamental One Health questions for the committee to consider:

1. How is our health and wellness connected to health and wellness of animals and environment?
2. How do we make One Health the foundation of how we work together and make policy?

The One Health concept recognizes that humans are part of an ecological continuum. Humans, animals and the environment are interconnected, and until we are ALL safe, none of us are safe. Dr. Stroud highlighted the areas in need of a One Health focus including: zoonotic diseases, antimicrobial resistance, biodiversity, climate change, disaster preparedness and food/ water security.

Dr. Stroud sees opportunities and a call to action for USAHA:

- USAHA has always been practicing One Health, and we are poised to grow meaningful connections with animal agriculture, public health, environmental health, and other organizations.
- Dr. Stroud challenged the One Health Committee to make science communication a priority, and use One Health as a platform to highlight USAHA’s work.

Committee Business:

The committee discussed two resolutions that came from two subcommittees. The first resolution was presented by Dr. Maki with the Subcommittee on Rabies. That resolution was a request for increased funding for fiscal year 2024 for USDA-APHIS, Wildlife Services (WS) National Rabies Management Program and request the development of an oral rabies/ vaccine bank. That resolution was passed by the parent committee.

The second resolution was presented by Dr. Ashworth with the Subcommittee on Salmonella. That resolution was to request that USDA, Food Safety and Inspection Service (FSIS) make scientific, data-driven decisions for new Salmonella policies and specifically concerning stuffed raw chicken products. That resolution was passed by the parent committee with one amendment.
Amelia Breinig, DC; Susan Bright-Ponte, MD; Stephen Crawford, NH; Chase DeCoite, DC; Alexandra Deges, TX; Leah Dorman, OH; Katie Flynn, KY; Heather Fowler, IA; Lindy Froebel, DC; Tam Garland, TX; K. Fred Gingrich II, OH; Gail Golab, IL; Stephen Goldsmith, DC; Alicia Gorczyca-Southerland, OK; Rod Hall, OK; Donald Hoenig, ME; Jeffrey Kaisand, IA; Patrice Klein, DC; Margie Lyness, GA; Edie Marshall, CA; Patrick McDonough, NY; Michael Neault, SC; Elizabeth Parker, TX; M. Gatz Riddell, AL; Katie Rumsey, IA; Joni Scheftel, MN; Marissa Silva, CA; Kathryn Simmons, DC; Susan Stehman, PA; Ross Wilson, TX; Thach Winslow, TN; Ryan Wolker, AZ

The Subcommittee met on Monday October 10, 2022, from 8:00-10:00 a.m. Virtual attendees joined via the virtual conference platform. There were 36 attendees total, 32 in-person and four virtual. The Subcommittee agenda included below was built to allow the subcommittee members time to receive relevant updates from state, federal and association partners on topics in their areas.

Presentations and Reports

The meeting was comprised of three oral presentations and the business meeting. The meeting began with an activity update by Dr. Chelsey Shively of the USDA highlighting activities related to antibiotic use and tracking in food animal species, as well as future activities that will encompass more animal species. Dr. Michael Costin of the American Veterinary Medical Association (AVMA) highlighted AVMA’s efforts to promote stewardship as well as describe new policies approved by the AVMA House of Delegates in this space this year. Dr. Edie Marshall of the California Department of Food and Agriculture closed the subject matter presentations by sharing her state’s experience in moving antibiotics from over the counter to prescription. Attendees and speakers participated in Q&A sessions after each section. The PowerPoint presentations can be viewed at https://www.usaha.org/one-health.

Committee Business:

The business meeting included updates on the 2021 subcommittee recommendation and proposed changes to the subcommittee mission statement. Members will consider the concepts of “less is more”, overlaps with other committees, global systems that may not match our own, and the appropriate breadth of animal species. The proposed mission statement is:

The purpose of the Subcommittee on Pharmaceutical Issues is to provide a forum for identification and review of issues affecting the availability and safe use of pharmaceuticals, animal devices, novel and evolving processes, nutritional supplements, and nutraceuticals and other unregulated products in animals. Primary attention will be given to disease prevention, treatment and control; product safety for humans and animals; and improving health and productivity of food animals.

During the meeting Drs. Stephen Crawford and Heather Fowler announced they will be stepping down at the end of the Annual Meeting for other opportunities and invited others to consider volunteering to fill the vacancies. Meeting adjourned at 9:59 a.m.
The Subcommittee on Rabies met virtually and in-person on October 9, 2022, from 10:00-11:55 a.m. in Minneapolis, Minnesota. There were 28 members present. The session commenced with a welcome and overview of the agenda. One resolution previously provided to members by e-mail was discussed.

Presentations and Reports

Dr. Arleigh Reynolds, University of Alaska, Fairbanks and Dr. Laurie Meythaler-Mullins, Colorado State University discussed One Health out of Necessity and Creative Problem-Solving – Managing Rabies Challenges in the Yukon and Beyond.

Dr. Robert Gerlach, Alaska Dept of Environmental Conservation gave an Alaska Wildlife Rabies Update.

Dr. Emily Pieracci and Dr. Ryan Wallace, U.S. Center for Disease Control and Prevention (CDC) presented the Ban on Dog Importation to the U.S. from High-risk Rabies Countries – recent incidents and federal mitigations. The report is provided below.

Richard Chipman, USDA-APHIS, Wildlife Services (WS) gave a pre-recorded Update on the USDA-WS Raccoon ORV Program.

Update on CDC’s Suspension of Dogs from High-Risk Countries: New importation requirements as of June 10, 2022

Emily Pieracci and Ryan MacLaren Wallace, Centers for Disease Control and Prevention (CDC)

On July 14, 2021, CDC implemented a suspension for dogs entering the U.S. from high-risk rabies countries. CDC took this action to ensure the health and safety of dogs imported into the United States and to protect the public’s health against the reintroduction of canine rabies virus variant. During this time, CDC issued a limited number of dog import permits to persons permanently relocating to the U.S. with their personal pets, such as for employment or education, or owners of service dogs. Commercial dog imports were not permitted.

On June 10, 2022, CDC relaxed its suspension requirements such that all dogs, including commercial dog imports, may be eligible for importation as long as they meet specific requirements. Commercial dog imports must arrive at a port with a CDC-approved animal care facility and undergo examination and revaccination prior to release. Additionally, dogs arriving from high-risk rabies countries without a serologic titer from an approved laboratory, must undergo a 28-day quarantine at the CDC-approved animal care facility. Additionally, new changes to the Council for State and Territorial Epidemiologists
Position Statement for Animal Rabies includes updates to improve data quality and timeliness of case notifications to CDC, which will further bolster CDC’s ability to monitor for non-endemic virus introductions and provide assistance during state-led investigations.

CDC will discuss new on ongoing challenges during the current suspension as well as next steps to address the ongoing challenges with dog importation in the United States.

Committee Business:
There was a request for members in attendance to sign-in and to indicate if they would be interested in receiving follow-up emails regarding the CDC dog import ban. The Centers for Disease Control update on dog importation recommendations will be published in the Federal Register later this year and committee members will be notified.

Those in attendance reviewed the proposed rabies resolution which was passed by the subcommittee without comment or edits. The meeting was adjourned.
Chris Ashworth, AR; Casey Barton Behravesh, GA; Susan Bright-Ponte, MD; Charles Brown, WI; Louise Calderwood, VA; Chase DeCoite, DC; Alexandra Deges, TX; Heather Margaret Fenton, NT; Heather Fowler, IA; Lindy Froebel, DC; Alicia Gorczyca-Southerland, OK; Scott Gustin, AR; Rod Hall, OK; Jarra Jagne, NY; Ashley Johnson, IN; Jeffrey Kaisand, IA; Jane Lewis, CT; Rebecca Mansell, NC; Edie Marshall, CA; Patrick McDonough, NY; Cheryl Nelson, KY; Kayla Niel, PA; Elizabeth Parker, TX; Bill Pittenger, MO; Suelee Robbe-Austerman, IA; Nancy Ruby, OK; Yuko Sato, IA; Joni Scheftel, MN; Ryan Scholz, OR; Sheryl Shaw, DC; Shri Singh, KY; Philip Stayer, MS; Susan Stehman, PA; Alberto Torres, AR; Jennifer Weber, MO; Ben Wileman, MN; Ross Wilson, TX.

The Subcommittee on Salmonella met virtually on September 26 with 24 people attending on-line. The Subcommittee met in-person at the Annual Meeting on October 10, 2022, in Minneapolis, Minnesota with approximately 45 people in the room.

Presentations and Reports

In the virtual meeting, Brenda Morningstar-Shaw, USDA-APHIS, National Veterinary Services Laboratories (NVSL) presented a complete update of the Salmonella Serovars Submitted to NVSL in Ames, Iowa for Identification. There were some shifts in serovars found in clinical and non-clinical samples. There were 10,943 samples submitted in 2021 from 5,498 clinical samples and 3,564 non-clinical samples and 1,881 research and other samples. There was a total of 212 different serovars found.

Swine samples were the highest submissions with 2,395, bovine at 1,170, chicken at 634, equine at 579, turkey at 111, all other at 609 submissions.

CDC Salmonella Illnesses Related to Backyard Poultry
Kathy Benedict, National Center for Emerging and Zoonotic Diseases

Her presentation was a detailed recap of the 2021 outbreak of Salmonella in 1,191 humans from 50 different backyard poultry operations.

There were 11 different serovars of Salmonella in this human outbreak. The outbreak was nationwide with the most infections in California, followed by Minnesota, Wisconsin, and Pennsylvania.

Enteriditis, Hadar and Infantis were the three most common serovars of the 11 that were found. There was no S. Pullorum or S. Gallinarum found.

The disease is most common in children under five, people greater than 65 or people with weakened immune systems.

PulseNet monitors for general clusters, as reports come in from State Departments of Health. Then CDC epidemiologists are notified when clusters are detected. A supplemental questionnaire is then attempted to be completed for the family or affected individual.

A traceback is then attempted from the patient to the retail outlet of where the birds came from and then to the hatchery of origin State Ag/OSA/State Health contacted, a discussion with the hatchery is attempted by the state, source of outbreak strain is established.

Of 199 purchased, backyard poultry have been traced from 54 companies to nine hatcheries. A multi-tier prevention plan is in place from hatcheries, to feedstore retail outlets and at the home.
Outbreak of Salmonella in Humans in Frozen Not-Ready-To-Eat Breaded Chicken Products

Sheryl Shaw, Food Safety and Inspection Service (FSIS)

The 2021 outbreak had 21 cases in eight states. Although the product type has had outbreaks back to 2014. The patients ranged from three to 83 years of age. A total of 59,251 pounds of this product was recalled.

FSIS initiated policy initiatives to modify labeling of not-ready-to-eat (NRTE) stuffed chicken produce that appear as being ready-to-eat.

CDC had put together storyboards to help consumers understand that these are uncooked products, and they are not-ready-to-eat. They are to be cooked, preferably not in a microwave, and use a food thermometer to achieve a temperature of 165 degrees for chicken and to wash your hands after handling raw chicken products.

Dr. Shaw also presented material on FSIS, National Antimicrobial Resistance Monitoring System (NARMS) and the monitoring of anti-microbial resistance in 14 serovars of Salmonella in poultry. This is an ongoing project since 1996 in a collaboration between CDC, Food and Drug Administration (FDA), and USDA-FSIS. She showed data specifically on S. Enteriditis and S. Hadar to the subcommittee.

Dr. Shaw presented data from a 2014 to 2019 report of Salmonella resistance to critically important anti-microbials in chicken. In chicken an increasing trend in resistance to critically important antimicrobials was noted. Although ciprofloxacin resistance in Salmonella isolates is generally low, a rise in DSC (not resistant - not susceptible) phenomenon was seen. The trends were primarily driven by Infantis.

Committee Business:

A resolution was presented to the subcommittee, and it passed. It stated:

*The United States Animal Health Association urges the United States Department of Agriculture (USDA) Food Safety and Inspection Service (FSIS) to make scientific, data-driven decisions for new Salmonella policies and to refrain from declaring Salmonella an adulterant of stuffed raw chicken products because this action is scientifically unwarranted, and unlikely to result in measurable reductions in the national salmonellosis incidence.*
COMMITTEE ON PARASITIC AND VECTOR BORNE DISEASES
Chair: Diane Kitchen, FL
Vice Chair: Hallie Hasel, WY

Gary Anderson, KS; Sarah Bailey, ND; Kerry Barling, KY; Jenna Bjork, WI; Bethany Bradford, VI; Richard Breitmeyer, CA; Becky Brewer-Walker, OK; Kevin Brightbill, PA; Charlie Broadus, VA; Charles Brown, WI; Christine Casey, KY; Robert Cobb, GA; Sarah Coburn, AK; Karen Conyngham, TX; Susan Culp, TX; Chase DeCoite, DC; Bryan Deimeke, KS; Ignacio dela Cruz, MP; Barbara Determan, IA; Kim Dodd, MI; Brandon Dominguez, TX; Roger Dudley, NE; Anita Edmondson, CA; Dee Ellis, TX; Doug Ensley, GA; James Evermann, WA; Heather Margaret Fenton, NT; Joe Fisch, FL; Rachael Fiske, ME; Allison Flinn, MD; Katie Flynn, KY; Tony Frazier, AL; Kaylie Fritts, NE; Margaret Gabour, MA; Cyril Gay, MD; Robert Gerlach, AK; Colin Gillin, OR; Gail Golab, IL; Alicia Gorczyca-Southerland, OK; Thomas Hairgrove, TX; Rod Hall, OK; Nathan Harvey, NH; Hallie Hasel, WY; Burke L. Healey, CO; Carl Heckendorf, CO; Janemarie Hennebelle, GA; Terry Hensley, TX; Bob Hillman, ID; Siddra Hines, WA; Dennis Hughes, NE; Anne Justice-Allen, AZ; Jeffrey Kaisand, IA; Diane Kitchen, FL; Patrice Klein, DC; T.R. Lansford, TX; Eric Liska, MT; Coleman Locke, TX; Linda Logan, TX; Travis Lowe, MN; Mark Luedtke, MN; David Marshall, NC; Chuck Massengill, MO; James Maxwell, WV; Thomas McKenna, MD; Katherine McNamara, VT; Sara McReynolds, KS; Scott McVey, NE; Andrea Mikolon, CA; Jason Moniz, HI; Peter Mundtschenk, AZ; Gleeson Murphy, IA; Amanda Murray, CA; Alecia Naugle, MD; Michael Neault, SC; Cheryl Nelson, KY; Susan Noh, WA; Dustin Oedekoven, SD; Gary Olson, MN; Elizabeth Parker, TX; William Parker, GA; Boyd Parr, SC; Angela Pelzel-McCluskey, CO; Allison Phibbs, DC; Bill Pittenger, MO; Jenny Powers, CO; Cassidy Rist, VA; Jonathan Roberts, LA; Nancy Ruby, OK; Mark Ruder, GA; Katie Rumsey, IA; Jaime Rutter, MS; Larry Samples, PA; Shawn Schafer, OH; Patty Scharko, SC; David Schmitt, IA; Andy Schwartz, TX; Charly Seale, TX; Laurie Seale, WI; Michael Short, FL; Kathryn Simmons, DC; Ben Smith, WA; Susan Stehman, PA; Katie Steneroden, CO; Sandra Strilec, NJ; Steve Strubberg, MO; Manoel Tamassia, NJ; Deepanker Tewari, PA; Tracy Tomascik, TX; Alex Turner, CO; Michele Walsh, ME; James Watson, MS; Jennifer Weber, MO; Marcus Webster, GA; Cliff Williamson, DC; William Wilson, KS; Ross Wilson, TX; Josh Winegarner, TX; Nora Wineland, MI; Thach Winslow, TN; David Winters, TX; Ryan Wolker, AZ; Melissa Yates, NC; Cristopher Young, CO; Marty Zaluski, MT.

The Committee met on October 11, 2022, from 3:15-5:15 p.m. in Minneapolis, Minnesota. There were 57 members and guests present in-person along with virtual attendees.

Presentations and Reports

SCWDS Update on 2022 Hemorrhagic Disease Activity
Mark G. Ruder, Rebecca Poulson, David Stallknecht, Southeastern Cooperative Wildlife Disease Study (SCWDS)

Annually, SCWDS processes tissue samples from throughout the United States from wild ruminants with suspected orbiviral hemorrhagic disease. Submissions are initially tested for epizootic hemorrhagic disease virus (EHDV) and bluetongue virus (BTV) by real-time reverse transcription PCR (rRT-PCR). For samples that test positive by RT-PCR, virus isolation is attempted and isolates are identified to serotype. Samples with no virus isolate are not further typed.

During 2021, a total of 333 white-tailed deer, mule deer, elk, pronghorn, moose and bighorn sheep samples were received from 28 states. This first positive case, confirmed by both real-time reverse-transcriptase polymerase-chain-reaction (rRT-PCR) and virus
isolation (EHDV-2), was detected from a white-tailed deer from Kansas that was found dead on July 25, 2021. During 2021, samples were tested from Alabama, Arkansas, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Michigan, Mississippi, Missouri, Montana, Nebraska, New Jersey, New York, North Carolina, North Dakota, Oregon, Pennsylvania, South Carolina, Vermont, Virginia, West Virginia, and Wisconsin. From these submissions, 103 EHDV and BTV were isolated. EHDV-2 was isolated from 82 samples submitted from 13 states including Arkansas, Georgia, Idaho, Kansas, Kentucky, Missouri, Montana, Nebraska, New Jersey, New York, North Dakota, Oregon, and Pennsylvania. Most of these positive cases were from white-tailed deer; however, EHDV-2 was also isolated from a mule deer sample and two pronghorn samples submitted from Montana. EHDV-6 was isolated from 17 samples from white-tailed deer submitted from Florida, Michigan, Missouri, New York, Pennsylvania, and Wisconsin. Several BTV were detected including BTV-11 from a white-tailed deer in Nebraska, BTV-13 from a white-tailed deer and mule deer in Montana, and BTV-1 (confirmed by National Veterinary Services Laboratories (NVSL)) from a white-tailed deer in Louisiana.

As of October 1, 2022, we have tested 223 white-tailed deer (Arkansas, Delaware, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Mississippi, Missouri, Montana, Nebraska, North Carolina, New Hampshire, New Jersey, New York, Pennsylvania, South Carolina, Tennessee, Virginia, Wisconsin, and West Virginia), 13 elk (Kentucky, Nebraska, West Virginia), two mule deer (Montana, Nebraska), and six pronghorn (Kansas, Montana, Nebraska), and one mule deer. EHDV-2 was isolated from white-tailed deer in Florida, Illinois, Indiana, Kentucky, Maryland, Missouri, Montana, North Carolina, New Jersey, New York, Pennsylvania, Tennessee, Virginia, and West Virginia. BTV-17 was isolated from white-tailed deer in Delaware, North Carolina, Virginia, and West Virginia. BTV-11 was isolated from white-tailed deer in North Carolina. All elk and mule deer tested negative for EHDV and BTV by rRT-PCR. Two pronghorn from Montana tested positive for BTV by rRT-PCR and virus isolation is pending. Testing will continue on samples received through October and into early November.

USDA-APHIS Regulatory Equine Disease Report
Angela Pelzel-McCluskey and Stephanie Brault, USDA-APHIS-VS

Vesicular Stomatitis (VS)

As of October 1, 2022, there have been no VS cases confirmed in the U.S. during the 2022 calendar year and routine surveillance for the disease is ongoing. The last VS outbreak in the U.S. occurred in 2020 and was an overwintering event preceded by an outbreak in 2019. A publication entitled Review of Vesicular Stomatitis in the United States with Focus on 2019 and 2020 Outbreaks was published in the peer-reviewed journal Pathogens in 2021 and can be accessed at the following link: https://doi.org/10.3390/pathogens10080993

Complete situation reports for previous VSV outbreaks can be accessed on the USDA-APHIS website: https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/cattle-disease-information/vesicular-stomatitis-info

Update on Equine Piroplasmosis (EP) and Equine Infectious Anemia (EIA)

In calendar year 2021, there were 35,493 domestic U.S. horses tested for equine piroplasmosis (EP) as part of active ongoing surveillance. While a significant portion of the testing focused on the previously identified high-risk groups of sanctioned and unsanctioned Quarter Horse (QH) racehorses where iatrogenic transmission of the disease is well recognized, many other types of horses were also tested for interstate movement, clinical disease rule-out, change of ownership, and export. A total of 36 horses were found to be infected with Theileria equi during this time period in seven states
(Florida, Georgia, Iowa, Louisiana, Oklahoma, Tennessee, and Texas). Thirty-one (31) of the 36 horses were QH racehorses with iatrogenic transmission identified as the method of spread. Needle/syringe/intravenous (IV) set reuse between horses was a common finding among the cases. Other methods of iatrogenic spread routinely encountered in EP investigations include blood-contamination of multi-dose drug vials, administration of illegal blood and plasma products originating outside the U.S., and direct blood transfusion between horses for the purpose of increasing athletic performance. The remaining five *T. equi*-infected horses (2 Andalusians, 3 QH saddle horses) identified in 2021 were suspected or confirmed to have been illegally moved from Mexico. Fifteen (15) of the total 36 EP-positive horses were dual infected with EIA which was likely transmitted by iatrogenic transmission in the QH racehorses (12) and by natural transmission in Mexico for the horses illegally moved from Mexico (3).

So far in calendar year 2022, a total of 13 EP-positive cases (11 *T. equi*-positive, 1 *B. caballi*-positive, 1 co-infected with both *T. equi* and) have been found in six states (Arizona, Indiana, *B. caballi* Louisiana, Oklahoma, South Carolina, and Texas) as of September 15, 2022. Six (6) horses are current or former Quarter Horse racehorses with iatrogenic transmission of the disease either suspected or confirmed. One (1) horse is a 2-year-old unraced QH colt born to an EP-positive former QH racing mare in which in utero transmission appears to have occurred. The six (6) remaining EP-positive horses (1 Andalusian, 1 Warmblood, 1 QH saddle horse, and 3 Argentinian polo ponies) are either suspected or confirmed to have been illegally moved from Mexico. Two (2) of the total 13 EP-positive horses were found to be co-infected with EIA. The horses that were co-infected with both EP and EIA have been euthanized and many of the remaining EP-positive horses have been enrolled in the USDA-APHIS EP Treatment Program. All EP-positive horses will remain quarantined until permanent clearance of the EP-organisms through high-dose imidocarb dipropionate treatment is achieved and the horse maintains EP-negative status on all diagnostic testing. To date, there have been 387 horses treated in the U.S. for EP with 335 horses having met the clearance and test-negative criteria required for quarantine release.

In calendar year 2021, a total of 1,416,809 EIA tests were conducted in the U.S. with 103 horses confirmed as EIA-positive in 17 states (Alabama, Arizona, California, Colorado, Georgia, Illinois, Iowa, Louisiana, Mississippi, Missouri, New Mexico, Oklahoma, Oregon, Tennessee, Texas, Utah, and Virginia). Eighty-four (84) of the 103 EIA cases occurred in QH racehorses with iatrogenic transmission either suspected or confirmed to have been the source of spread. Of the remaining 19 EIA cases, 11 originated from untested/undertested herds where natural transmission was likely occurring over a long period of time; five (5) horses were suspected or confirmed to have been illegally moved into the U.S. from Mexico; and three (3) horses were infected from an unknown/undetermined source. So far in 2022, there have been at least 976,862 EIA tests performed in the U.S. (reporting period January-August 2022) with 67 new EIA cases confirmed in 12 states (Arizona, California, Colorado, Georgia, Illinois, Iowa, Missouri, Nevada, Ohio, South Carolina, Texas, and Utah) as of September 15, 2022. Fifty-six (56) of the 67 EIA positives occurred in QH racehorses with iatrogenic transmission of the disease either suspected or confirmed. Many of the EIA-positive horses were found to be participating in unsanctioned racing. The EIA cases identified over the past few years further highlight our recognition of a recent shift in the epidemiology of EIA in the U.S. While prior to 2017, many of the EIA cases were found to be in untested or under-tested equine populations where natural vector-borne transmission of the disease had been occurring over time, since 2017 the majority of the EIA cases each year are now being found in QH racehorses with iatrogenic transmission involved. Iatrogenic transmission of EIA is a preventable occurrence and targeted educational outreach is needed in these high-risk populations to reduce the incidence of EIA and eliminate further spread.

PARASITIC AND VECTOR-BORNE DISEASES

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Annual EIA reports are available on the USDA-APHIS website at the following link: https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/equine/eia/equine-infectious-anemia

Annual EP reports are available on the USDA-APHIS website at the following link: https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/equine/ep/equine-piroplasmosis

West Nile Virus (WNV) and Eastern Equine Encephalitis (EEE)
Equine case counts for WNV and EEE are sourced from the CDC’s ArboNET database and summarized by APHIS-VS in consultation with state animal health officials (SAHOs). Annual reports for each disease are compiled by calendar year which can be accessed at the following links:
For WNV information: https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/equine/wnv

More current equine case counts are now available as of September 2022 to state animal health officials via an online Tableau dashboard.

In calendar year 2021, there were 220 equine WNV cases identified in 35 states. So far in 2022, there have been at least 21 equine WNV cases identified in 11 states as of September 26, 2022. For EEE, there were 111 equine cases reported in 16 states in calendar year 2021 and, in 2022, a total of at least 14 cases in two states have been reported as of September 26, 2022. Delays in reporting equine arboviral cases in ArboNET are routinely recognized, so numbers reported here for 2022 are expected to be an under-representation of the actual current case counts and number of states affected.

Since 2019, several observations surrounding EEE infections have raised concerns both in the veterinary and human medical communities. Firstly, there were a record-setting number of human EEE infections reported in 2019; a total of 38 human cases in ten states with 15 fatalities. The number of human EEE cases across the years 2009-2018 had an average of seven cases per year recorded with the highest case count in a single year being 15 cases in 2012. Another unexplained observation was that for the first time in history, the ratio of equine WNV cases to equine EEE cases was inverted in both 2019 and 2020. In previous years, equine WNV cases usually outnumber equine EEE cases 2:1. In 2019 and 2020, the number of EEE cases was double that of WNV in equids. Finally, the number of EEE cases confirmed in alternate and wildlife species had not been recognized at such a high level and with so many species of animals represented as were reported in 2019. These anomalies for EEE in 2019 and 2020 have yet to be explained and there is concern that increasingly active years may begin to occur periodically for EEE infection in all species.

USDA-APHIS-VS Diagnostics & Biologics (D&B) National Veterinary Services Laboratories (NVSL) - Bluetongue Update
Mia Torchetti, USDA-APHIS-NVSL

During the 2021 USAHA Committee Meeting, response to the 2020 USAHA resolution Re-evaluation of Endemic Bluetongue Virus Serotypes in the United States was presented. USDA developed updated criteria for classifying bluetongue virus (BTV) serotypes, coordinated stakeholder working groups, requested comments, and a cross-unit working group was charged with leveraging this information to update the status of serotypes in the U.S. The updated criteria were then posted at the USDA site online August 2022.

To better reflect the status of bluetongue (BTV), USDA-APHIS have updated the criteria to classify serotype-specific detections. The use of endemic/exotic has now been
replaced with “established, reported, not reported” as listed below. The updated criteria do not change the classification status of “bluetongue is present” in the U.S. as any serotype is currently reportable to the World Organisation for Animal Health (WOAH). These criteria are not intended to reflect prevalence, rather to help classify the serotypes detected in the U.S. annually.

- **Established:** (Serotypes 3, 6, 10, 11, 12, 13, 17) a specific serotype has been reported annually for two consecutive years in a geographic region where vector incursions due to weather events would not be expected; OR there is documented phylogenetic evidence of virus reassortment with previously established strains in domestic and wild animals.

- **Reported:** (Serotypes 1, 2, 5, 9, 14, 15, 18, 19, 22, 24) a detection based on the current APHIS BTV serotype case definitions that has not been detected in the past five years; OR detection in geographic regions where vector incursions due to weather events are expected and have not been detected consecutively for two years.

- **Not reported:** (Serotypes 4, 7, 8, 16, 20, 21, 23, 25, 26)

These updated criteria do not affect the requirements under the Title 9 Code of Federal Regulations, part 122.2, VS continues to require permits for the import and interstate movement of all BTV strains. Nor do they impact the 2020 VS Strategy and Policy, Agricultural Select Agent Services, Organisms and Vectors update that re-evaluated BTV and retained BSL-3 requirements only for serotype 8, including animal work.

At the Diagnostic Virology Laboratory of NVSL, rapid serotyping methods and whole genome sequencing will be conducted on all orbivirus detections and summaries will be provided to this committee with a new format starting in 2023. We have increased our capacity for whole genome sequencing, as well as continuing work on improving data pipelines with ARS and academic partners. While bluetongue is not an APHIS program disease and there is no formal surveillance, better understanding of virulence factors, and ongoing monitoring through passive and other sampling efforts to identify strains of concern, incursions of unexpected serotypes and/or reassortants continues to be needed.

**Cattle Fever Tick Update**

*Andy Schwartz, Texas Animal Health Commission (TAHC)*

Currently in Texas, there are a total of 2,920 premises under quarantine covering 812,000 acres in six counties.

Voluntary dipping is made available with state and federal resources at six markets in south Texas. Buyers may choose to have cattle dipped as insurance against tracing if fever ticks are discovered on source herds within the next year. This also provides valuable surveillance, and has detected previously unknown infestations more than ten times.

Vaccination of cattle in the permanent quarantine zone is required, as well as on some infested premises outside this zone. Approximately 8,500 doses are administered annually.

The current strategy includes construction of game fencing to help prevent the spread of fever ticks by limiting the movement of white-tailed deer and nilgai antelope. Key locations such as wildlife corridors have been identified, and Cattle Fever Tick Eradication Program (CFTEP) is in the process of awarding contracts. TAHC is cooperating with Texas A&M Kingsville to study the effects of a 10-mile stretch of fence on the interaction of cattle, white-tailed deer, and nilgai antelope.

Deployment of remotely operated sprayers to apply tick-killing entomopathogenic nematodes to nilgai antelope and white-tailed deer is delayed. The U.S. Food and Drug Administration (FDA) considers these nematodes to be an animal drug. It’s not feasible for the nematode source company to pursue approval as an animal drug. Other products are
TAHC and CFTEP are working jointly on an eprinomectin field trial. A study conducted at Agricultural Research Service (ARS) Moore Field demonstrated that three successive injections of this drug killed ticks for approximately 110 days. Additional work is needed to establish the optimal treatment interval, as well as drug withdrawal times.

Committee Business:

The meeting was called to order at 3:23 p.m. CT and the Committee mission statement and meeting processes were reviewed.

A 2019 Resolution review of Resolution #38 Equine Infectious Anemia (EIA) and Equine Piroplasmosis (EP) Control Strategies. USDA offered an updated response to the committee:

_The EP and EIA Uniform Standards documents are currently being worked on, but they’ve suffered significant delays in being drafted due to other priorities. So, at this time, we don’t have an updated timeline on when these will reach an appropriate stage for SAHO review and comment. We will get there, though!_

The Committee voted to **Continue Follow-up as Is** based on an updated USDA Response.

One resolution was presented to the committee but failed to receive a motion to consider and was not discussed.

Dr. Hallie Hasel has agreed to assume Chair of Committee and Dr. TR Lansford is willing to serve as Vice Chair for next year. The Committee was adjourned at 5:06 p.m. CT.
COMMITTEE ON POULTRY AND OTHER AVIAN SPECIES
Chair: Yuko Sato, IA
Vice Chair: Kayla Niel, PA

Bruce Akey, VA; Erika Alt, WV; Sarah Bailey, ND; Tom Baker, ON; Elena Behnke, GA; Joy Bennett, NY; Carolyn Bissett, VA; Richard Breitmeyer, CA; Paul Brennan, IN; Becky Brewer-Walker, OK; Charlie Broadus, VA; Louise Calderwood, VA; Steven Clark, NC; John Clifford, GA; Robert Cobb, GA; Sarah Coburn, AK; Maria Cooper, IN; Stephen Crawford, NH; Tarrie Cmnic, KS; Beate Crossley, CA; Marie Culhane, MN; Bryan Deimeke, KS; Amy Delgado, CO; Thomas DeLiberto, CO; Roger Dudley, NE; Tracey Dutcher, MN; Anita Edmondson, CA; Anita Edmondson, CA; Brigid Elchols, MS; Joseph Essler, TX; Heather Margaret Fenton, NT; Katie Flynn, KY; Larry Forgey, MO; Nancy Frank, MI; Tony Frazier, AL; Kaylie Fritts, NE; Lindy Froebel, DC; Samantha Gibbs, FL; Sandra Gilmore, IL; Michael Gilsdorf, MD; Eric Gingerich, IN; Eric Gonder, WI; Jenna Gregorich, OH; James Grimm, ; Scott Gustin, AR; Daniel Hadacek, VA; Rod Hall, OK; Steve Halstead, MI; Charles Hatcher, TN; Kate Hayes, AL; Burke L. Healey, CO; Denise Heard, GA; Julie Helm, SC; Janemarie Hennebelle, GA; Ashley Hill, CA; Heather Hirst, DE; Donald Hoenig, ME; Donald Hoenig, ME; Dennis Hughes, NE; Carolyn Hurwitz, ME; Mark Jackwood, GA; Jarra Jagne, NY; Annette Jones, CA; Rebecca Joniskan, IN; Jeffrey Kaisand, IA; Donna Kelly, PA; Patrice Klein, DC; Darlene Konkln, WI; Michael Kopp, IN; Dale Lauer, MN; Elizabeth Lautner, IA; John Lawrence, ME; Molly Jean Lee, IA; Jane Lewis, CT; Mary Jane Lis, CT; Karen Lopez, DE; Rebecca Mansell, NC; David Marshall, NC; Michael Martin, NC; James Maxwell, WV; Patrick McDonough, NY; Katherine McNamara, VT; Sara McReynolds, KS; Andrea Mikolon, CA; Gay Miller, IL; Sarah Mize, CA; Roxann Motroni, MD; Amanda Murray, CA; Lee Myers, WA; Michael Neault, SC; Cheryl Nelson, KY; Kayla Niel, PA; Kristy Pabilonia, CO; Boyd Parr, SC; Elisabeth Patton, WI; Bill Pittenger, MO; Amanda Price, UT; Lisa Quiroz, CA; Willie Reed, IN; Heather Reider, CO; Byron Rippke, IA; Jonathan Roberts, LA; Susan Rollo, TX; James Roth, IA; Nancy Ruby, OK; Mo Saif, OH; John Sanders, WA; Yuko Sato, IA; Travis Schaal, IA; Joni Scheftel, MN; David Schmitt, IA; Ryan Scholz, OR; Andy Schwartz, TX; Sheryl Shaw, DC; Kyle Shipman, IN; Shri Singh, KY; Staci Slager, IL; Philip Stayer, MS; Darrel Styles, MD; Dennis Summers, OH; Gregory Suskovic, MN; Manoel Tamassia, NJ; Todd Tedrow, SD; Beth Thompson, SD; Mia Kim Torchetti, IA; Alberto Torres, AR; Shauna Voss, MN; Michele Walsh, ME; Elizabeth Warren, DE; James Watson, MS; Dustin Weaver, GA; Jennifer Weber, MO; Marcus Webster, GA; Rodney White, MD; Ben Wileman, MN; Ryan Wolker, AZ; Melissa Yates, NC.

The Committee met virtually on October 3, 2022, from 9:00 a.m. to 12:17 p.m. and at the Annual Meeting in Minneapolis, Minnesota on October 10, 2022, from 8:00 a.m. to 12:54 p.m. There were 54 members in-person, up to 59 members virtually (with additional members and guests on the hybrid portal during the in-person meeting), and 58 guests present in-person. Chair Yuko Sato presided, assisted by Kayla Niel, Vice Chair. Sato welcomed the Committee on Poultry and Other Avian Species (CPAS) members and summarized housekeeping items.

Presentations and Reports

Virtual Meeting (10-03-2022):
AVBP Current Diseases of Concern was given by Dr. Carl Heeder, Mountaire Farms. A summary of the report is included in these proceedings.
Table Egg Layer Industry Report was given by Dr. Eric Gingerich, Diamond V. A summary of the report is included in these proceedings.
Turkey Industry Report was prepared by Dr. Steven Clark and given by Dr. Lindy
Froebel, National Turkey Federation. A summary of the report is included in these proceedings.

**Upland Gamebird Industry Report** was given by Mr. Troy Laudenslauger, Mahantongo Game Farms.

**NVSL Bacteriology Diagnostics Report** was given by Ms. Brenda Morningstar-Shaw, USDA-APHIS-VS-NVSL. A summary of the report is included in these proceedings.

**National Poultry Improvement Plan (NPIP) Update** was presented by Dr. Katy Burden, USDA-APHIS-VS-NPIP. A summary of the report is included in these proceedings.

**Subcommittee on Avian Influenza (AI) and Newcastle Disease (NDV) Report** was given by Dr. David Suarez, USDA-ARS-SEPRL. A summary of the report is included in these proceedings.

**Multistate Investigations of Human Salmonella Illnesses linked to Backyard Poultry** was given by Dr. Sean Stapleton, CDC-EZA, and prepared with Dr. Kathy Benedict. A summary of the report is included in these proceedings.

**Live Bird Market System Report** was given by Dr. Fidelis Hegngi, USDA-APHIS-VS. A summary of the report is included in these proceedings.

**In-person Meeting (10-10-2022):**

**USDA Response Lessons Learned** was given by Dr. Barbara Porter-Spalding, USDA-APHIS-VS. A summary of the report is included in these proceedings.

**State Highly Pathogenic Avian Influenza (HPAI) Responses** were given by Dr. Bret Marsh, Indiana State Board of Animal Health; Dr. Kevin Brightbill, Pennsylvania Department of Agriculture; Dr. Roger Dudley, Nebraska Department of Agriculture.

**Emergency Mass Depopulation Strategies** were given by Dr. Jill Nezworski, Blue House Veterinary LLC; and Dr. Carrie Cremers, Jennie-O Turkey Store. A summary of the report is included in these proceedings.

**Post Highly Pathogenic Avian Influenza (HPAI) Survey** was given by Dr. Julie Helm, Clemson Livestock Poultry Health.

**Subcommittee on Avian Influenza (AI) and Newcastle Disease (NDV) Report** was given by Dr. Mia Kim Torchetti, USDA-APHIS-VS-NVSL. A summary of the report is included in these proceedings.

**USDA-APHIS Wildlife Services (WS) Report** was given by Dr. Julie Lenoch, USDA APHIS-WS.

**Highly Pathogenic Avian Influenza (HPAI) Epidemiology** was presented by Dr. Amy Delgado, Center for Epidemiology and Animal Health (CEAH); and Dr. Melissa Yates, USDA-APHIS-VS. A summary of the report is included in these proceedings.

**Committee Business:**

**Subcommittee Report:** The Subcommittee on Avian Influenza and Newcastle Disease Report as presented by Dr. David Suarez, was motioned to be approved by Dr. Julie Helm, seconded by Dr. Mike Martin, and approved by the Committee.

**New Committee Business:** Dr. Sato is completing her fourth year as CPAS Committee Chair in 2022. USAHA Committee Chairs are limited to five-year terms. Dr. Kayla Niel (Vice Chair) will assume the position as Chair in 2024.

**Committee Resolutions:** There were seven Resolutions that were brought before the Committee, six out of the seven were approved unanimously by the Committee:

1. **U.S. Compartmentalization Program Recognition**
2. **Telehealth & Virtual Reality Acceptance for Poultry Inspections**
3. **HPAI Compensation & Indemnification**
4. **HPAI Euthanasia and Depopulation**
5. **WOAH’s Definition of “Poultry”**
6. **Egg D0072op Syndrome (EDS) Epizootiology**
A motion to adjourn the meeting was initiated by Dr. Heather Hirst and seconded by Dr. Julie Helm. There being no further business the Committee on Poultry and Other Avian Species adjourned at 12:54 p.m.

AVBP Current Diseases of Concern

Carl Heeder, Mountaire Farms

Broiler Production: Broiler production (lbs.) decreased in 2021 (0.5%). Average broiler weights have been treading up for the last three years and increased 0.33 lbs. so far in 2022 versus 2021. After several years with feed cost decreasing (2018 through 2020), the industry has experienced two years of increasing feed prices. As a result, feed prices increased by 47% in the first half of 2022 when compared to the 2020 average feed price.

Mortality: Average total mortality for the first half of 2022 was 6.38% in U.S. broilers through 47.74 days, an increase of over 0.99% compared to 2021. Most bird categories had higher mortality than the prior year. It is notable that the 6.8-7.5 lbs. bird category had a 2.32% increase in mortality over the previous year. First week mortality increased 0.22% in 2022. Chick quality/early mortality is ranked 3rd in this year’s AVBP survey as shown later in this report.

Condemnations: Whole Bird Farm Condemnations + Parts Condemnations increased from 0.255% in 2021 to 0.280% in 2022.

Key Broiler Disease Issues (see below): This year the industry saw some shifts in the rankings of significant diseases in broiler production. Highly Pathogenic Avian Influenza (HPAI) moved up from the bottom of the list to near the top. HPAI was ranked #17 in 2021 and is ranked a close #2 in this year’s survey. The #1 issue remained Coccidiosis. Novel Reovirus and Infectious Bursal Disease both moved down five spots from the previous year (to #13 and #14, respectively). There were a few other diseases that shuffled slightly but for the most part the list remained relatively the same. Respondents did mention two other conditions that were not captured in this year’s survey that may be added in the future. Those are “duck/pigeon walkers” in replacement males and a novel enterococcus presentation of elevated first week mortality followed with polyserositis at 17-21 days.

Key Non-Disease Broiler Issues (see below): Much like the Disease Issues survey, there was significant shuffling of the rankings in the Non-Disease Issues. HPAI appeared to remain a driver in the Non-Disease Issues where Biosecurity was ranked as the #1 issue, up from #4 in 2021. HPAI was also most likely the cause for Exportation Issues to move from #10 to #8. Increased Food Safety Regulations and Increased Environmental Regulations remained in the #2 and #9 spots, respectively. Restricted Use of Antibiotics moved from #1 to #3. Meat Quality saw a significant drop in score from 4.7 to 2.8 – resulting in it moving from #8 down to #10.
## 2022 Disease and Non-Disease Rankings

As in previous years, the Association of Veterinarians in Broiler Production (AVBP) membership was polled concerning disease and non-disease issues. Major issues were ranked for both areas, and a further breakdown of specific disease and non-disease issues is included below.

AVBP is comprised exclusively of veterinarians employed full-time by U.S. broiler companies. The veterinarians responding to the 2022 survey represented most broilers in the United States.

<table>
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<tbody>
<tr>
<td>Average Age</td>
<td>47.82</td>
<td>47.13</td>
<td>47.04</td>
<td>47.16</td>
<td>47.02</td>
<td>47.07</td>
<td>47.41</td>
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<td>Average Broiler Weight</td>
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<td>6.22</td>
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<td>6.27</td>
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<td>228.90</td>
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<td>235.18</td>
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<td>1.54</td>
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<td>Mortality (3.6-4.4 lbs)</td>
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<td>3.65</td>
<td>3.53</td>
<td>4.06</td>
<td>4.08</td>
<td>3.97</td>
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<td>Mortality (4.4-5.2 lbs)</td>
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<td>3.55</td>
<td>3.83</td>
<td>4.24</td>
<td>4.32</td>
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<td>Mortality (5.2-6.0 lbs)</td>
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<td>Mortality (6.0-6.8 lbs)</td>
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<td>Mortality (6.8-7.5 lbs)</td>
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<td>Mortality (7.5-8.5 lbs)</td>
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<td>5.41</td>
<td>5.17</td>
<td>5.82</td>
<td>6.08</td>
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<td>Mortality (&gt;8.5 lbs)</td>
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<td>5.43</td>
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<td>WB Farm + Parts Condemns</td>
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<td>0.140</td>
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<td>0.130</td>
<td>0.111</td>
<td>0.087</td>
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<td>0.086</td>
<td>0.066</td>
<td>0.046</td>
<td>0.027</td>
<td>0.020</td>
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<td>IP Condemns</td>
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<td>0.020</td>
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<td>0.013</td>
<td>0.010</td>
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<td>Birds Placed (B)</td>
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<td>Pounds Produced (B)</td>
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<td>51.381</td>
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<td>RANKING</td>
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<td>Chick Quality and Early Mortality</td>
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<td>Infectious Laryngotracheitis</td>
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<td>8</td>
<td>Inclusion Body Hepatitis</td>
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<td>Bacterial Osteomyelitis of the Legs</td>
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<td>Vertebral Osteomyelitis/Kinkyback</td>
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<td>General Polyserositis - E. coli</td>
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<td>12</td>
<td>Histomoniasis</td>
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<td>Novel Reovirus</td>
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<td>14</td>
<td>Infectious Bursal Disease</td>
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<td>15</td>
<td>Mycoplasmosis</td>
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<td>16</td>
<td>Infectious Bronchitis- Nephropathogenic</td>
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<td>17</td>
<td>Cholera</td>
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<td>Newcastle Disease</td>
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<td>20</td>
<td>Coryza</td>
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</table>

**Rank of DISEASE issues in order of significance.**

![Diagram showing the rank and score of various diseases](image-url)
Table Egg Layer Industry Report

Eric Gingerich, Diamond V

Overall layer health is good due to several factors as follows:

• Continued good supply of high-quality biologics.
• Readily available veterinary technical assistance from primary breeder, vaccine company, diagnostic laboratory, feed additive suppliers, and consulting veterinarians.
• Flock supervision by professional, well-trained flock service technicians.
• High quality nutrition provided by professional nutritionists.
• Housing is of good quality in general supplying feed, lights, air quality, water, and space in the needed quantities and quality.
• Use of relatively sound biosecurity practices.
• Continual surveillance for foreign animal diseases or potentially highly pathogenic agents such as Newcastle and avian influenza by our state and federal laboratory system.

2022 Association of Veterinarians in Egg Production (AVEP) Disease Survey:
A poll of selected members of the Association of Veterinarians in Egg Production (AVEP) was conducted within the last month. These members were asked to categorize a list of common diseases of caged and cage-free pullets (20+ conditions listed) and caged
and cage-free layers (30+ conditions listed) as to their importance in their area of service on a scale of 0 to 4 with the following categories:

0 = Little or no importance to flock health or profitability. Very little effort to control.
1 = Some importance to flock health or profitability. Moderate effort to control on some farms.
2 = Moderate importance to flock health or profitability. Moderate effort needed to control on most farms.
3 = High importance to flock health or profitability. Significant effort to control on some farms.
4 = Very high importance to flock health or profitability. Significant effort to control on most farms.

Nineteen (19) of 41 (46%) targeted AVEP members answered the survey.

**Non-starter mortality and yolk infections of chicks** during the first week continue to be of some to moderate importance indicating there is still work to be done in breeder hatch egg sanitation, hatchery, and brooding management.

<table>
<thead>
<tr>
<th></th>
<th>Caged Pullets</th>
<th>Cage-free Pullets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2020</td>
<td>2021</td>
</tr>
<tr>
<td>Non-Starter Chicks</td>
<td>1.89</td>
<td>1.41</td>
</tr>
<tr>
<td>Yolk infections</td>
<td>1.96</td>
<td>1.64</td>
</tr>
</tbody>
</table>

The results showing the top diseases and conditions for the different classes of egg layers with their average ranking are shown below:

<table>
<thead>
<tr>
<th>Rank</th>
<th>Disease</th>
<th>Score</th>
<th>Rank</th>
<th>Disease</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Infectious bronchitis (IB)</td>
<td>2.63</td>
<td>1</td>
<td>Coccidiosis</td>
<td>2.78</td>
</tr>
<tr>
<td>2</td>
<td>Coccidiosis</td>
<td>2.53</td>
<td>2</td>
<td>Piling</td>
<td>2.50</td>
</tr>
<tr>
<td>3</td>
<td>Infectious Laryngotracheitis (ILT)</td>
<td>2.21</td>
<td>3</td>
<td>Infectious Bronchitis</td>
<td>2.22</td>
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<tr>
<td>4</td>
<td>Necrotic Enteritis (NE)</td>
<td>2.05</td>
<td>4</td>
<td>Infectious laryngotracheitis</td>
<td>2.17</td>
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<td>5</td>
<td>Infectious Coryza (IC)</td>
<td>1.95</td>
<td>5</td>
<td>Necrotic enteritis</td>
<td>2.06</td>
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<tr>
<td>6</td>
<td>Post Bacterin Hepatopathy</td>
<td>1.89</td>
<td>6</td>
<td>E coli + 2 weeks</td>
<td>1.94</td>
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<tr>
<td>7</td>
<td>Infectious Bursal Disease (IBD)</td>
<td>1.74</td>
<td>7</td>
<td>Post Bacterin Hepatopathy</td>
<td>1.89</td>
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<tr>
<td>8</td>
<td>E coli + 2 weeks</td>
<td>1.68</td>
<td>8</td>
<td>IBD</td>
<td>1.78</td>
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<tr>
<td>9</td>
<td>M gallisepticum (Mg)</td>
<td>1.47</td>
<td>9</td>
<td>Infectious coryza</td>
<td>1.72</td>
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<tr>
<td>10</td>
<td>Marek’s Disease (MD)</td>
<td>1.37</td>
<td>10</td>
<td>Mg</td>
<td>1.50</td>
</tr>
</tbody>
</table>
Caged Layers | Cage-free Layers
---|---
Rank | Disease | Score | Rank | Disease | Score
1 tie | *E coli* | 2.63 | 1 | *E coli* | 3.28
1 tie | Infectious bronchitis | 2.63 | 2 tie | Infectious bronchitis | 2.78
3 | Infectious coryza | 2.37 | 2 tie | Roundworms | 2.78
4 tie | Focal Duodenal Necrosis (FDN) | 2.16 | 4 tie | Piling | 2.72
4 tie | ILT | 2.16 | 4 tie | Cannibalism | 2.72
4 tie | Calcium Depletion | 2.16 | 6 | Coccidiosis | 2.33
7 | Coccidiosis | 1.89 | 7 | ILT | 2.28
8 tie | Cannibalism | 1.79 | 8 | Infectious coryza | 2.17
8 tie | Northern Fowl Mites (NFM) | 1.79 | 9 | Necrotic enteritis | 2.00
8 tie | Necrotic enteritis | 1.79 | 10 tie | FDN | 1.89
10 tie | Fowl Cholera | 1.89
10 tie | Egg Drop Syndrome (EDS) | 1.89

**Coccidiosis and necrotic enteritis** continue to be high on the lists of all classes of layers due to the hardy nature of coccidial oocysts once they are established in a house. Vaccination of caged pullets is a challenge due to difficulty in cycling sporulated vaccinal oocysts although a relatively new method of dosing flocks at 7, 14, and 21 days with vaccinal oocysts (sporulated) at 1/3 dose each time is working well. Cage-free pullets and layers outbreaks are usually due to breakdowns in litter management which override coccidiostat and gut health medication programs. The lack of routine antibiotic medication usage in early lay leads to an increase in necrotic enteritis should coccidiosis be a problem.

**Infectious bronchitis (IB)** continues in the top ten for layers but **False Layer Syndrome** due to exposure to variant strain IB in very young pullets in the first two weeks has dropped off the top ten list. Early vaccination with the Ma5 Mass or GA 08 vaccines have greatly prevented the problem. Infections with variant IBVs during grow or lay results in reduced feed consumption, higher mortality due to secondary bacterial infections, and loss of shell quality.

**Colibacillosis** in layer flocks continues as highly important. The live *E coli* vaccine does a good job of preventing the problem of early lay onset, but immunity is short-lived and does not provide sufficient protection for the late lay onset problems. Some producers are beginning to administer the live vaccine in mid-lay as a booster vaccination. An increase in the usage of killed vaccines during grow is also foreseen as new products come into the market.

**Peckout mortality of cage-free layers** continues as well as an important issue. Genetic predilection, lighting, and behavioral management is often at the root of the problem. Some pressure is on to move to intact beaks for some cage-free programs which may be a real challenge in some operations.

The **infectious coryza** situation in Pennsylvania which started in late 2019, is under control due to the widespread use of vaccine. Two Ohio complexes were involved with outbreaks this year plus some smaller, single-age cage-free flocks in Ohio.

**Post Salmonella Enteritidis (SE) Bacterin Hepatopathy** continues to be as an important cause of pullet mortality, especially in certain white egg strains. The problem is seen very little in brown egg strain pullets. Vaccine companies are continuing to work to determine why this syndrome exists. Preventing overheating of vaccine prior to use may be a key to prevention.
The high ranking of infectious bursal disease in pullets is due to the subclinical form resulting in poor growth rate, body weight uniformity, and response to vaccines not the acute mortality form.

The control of roundworms in egg layers got a boost as the product AquaSol (fenbendazole) was cleared for use in egg layers in production in 2018. Organic layers continue to be without a highly effective product to use for this condition.

Survey of Food Safety, Foreign Animal Diseases, and Other Issues of Concern:
The AVEP members were asked to rate their concerns on various topics according to the following scale:

0 = little importance, concern, or effort to prevent
1 = some importance, concern, or effort to prevent
2 = moderate importance, concern, or effort to prevent
3 = high importance, concern, or effort to prevent
4 = very high importance, concern, or effort to prevent

The results are summarized as follows:

<table>
<thead>
<tr>
<th>Disease or Issue</th>
<th>2020 Rating</th>
<th>2021 Rating</th>
<th>2022 Rating</th>
<th>Level of Concern 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avian influenza</td>
<td>2.46</td>
<td>2.64</td>
<td>3.95</td>
<td>Extreme High</td>
</tr>
<tr>
<td>Virulent Newcastle Disease</td>
<td>1.62</td>
<td>1.68</td>
<td>1.58</td>
<td>Low to Moderate</td>
</tr>
<tr>
<td>Lack of approved, effective treatments/antibiotics</td>
<td>3.07</td>
<td>3.41</td>
<td>3.74</td>
<td>Very High</td>
</tr>
<tr>
<td>Salmonella enteritidis (SE)/FDA Egg Safety Rule compliance</td>
<td>1.96</td>
<td>1.91</td>
<td>2.53</td>
<td>Moderate</td>
</tr>
<tr>
<td>Group C or other non-SE serotypes resulting in egg recalls</td>
<td>1.96</td>
<td>2.32</td>
<td>2.68</td>
<td>Moderate</td>
</tr>
<tr>
<td>Lack of effective vaccines</td>
<td>2.04</td>
<td>2.00</td>
<td>2.58</td>
<td>Moderate</td>
</tr>
<tr>
<td>Lack of effective diagnostics</td>
<td>1.46</td>
<td>1.76</td>
<td>2.05</td>
<td>Low</td>
</tr>
<tr>
<td>Welfare Issues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Possibility of banning beak trimming</td>
<td>2.22</td>
<td>2.82</td>
<td>2.84</td>
<td>Moderate to High</td>
</tr>
<tr>
<td>• Inability to use maceration for of male chicks after hatched</td>
<td>2.19</td>
<td>2.68</td>
<td>2.47</td>
<td>Moderate to High</td>
</tr>
<tr>
<td>• Continued misuse of MAK carts for on-farm euthanasia of spent fowl</td>
<td>2.59</td>
<td>2.86</td>
<td>2.50</td>
<td>Moderate to High</td>
</tr>
<tr>
<td>• Lack of guidance regarding emergency depopulation of layers</td>
<td>2.70</td>
<td>3.32</td>
<td>3.84</td>
<td>Very High</td>
</tr>
<tr>
<td>• Cage-free management challenges</td>
<td>2.56</td>
<td>3.09</td>
<td>3.00</td>
<td>High</td>
</tr>
</tbody>
</table>

The concern for HPAI is obvious. The lack of effective treatments, the lack of guidance for emergency depopulation, and cage-free management challenges continue as high concerns from the survey.
Avian Influenza:

Highly pathogenic H5N1 avian influenza virus outbreaks began in U.S. commercial premises in early February of 2022 in Indiana turkeys. The first layer premise to break was in a Delaware complex on February 22. A total of 27 pullet and layer premises have become infected in 11 states (DE, MD, IA, WI, SD, NE, MN, PA, UT, CO, and OH), and a total of 35.8 million pullets and layers have been depopulated in an effort to control the break. Compared to the 2015 HPAI outbreak, this break is being spread by migrating birds defecating HPAI virus near buildings and not laterally by fomites carrying virus from farm to farm. Also, due to rapid depopulation techniques, the lateral spread of HPAI was minimal. This virus has been shown to be established in the wild bird population and backyard flocks and may mean the U.S. poultry industries will be dealing with HPAI year-round. We obviously do not know how this virus is being introduced into our layer units indicating the industry needs definitive studies on the epizootiology of this virus.

Emerging Diseases:

Regional or emerging diseases, those that are serious but only seen in a small region or number of flocks, are being seen mostly in cage-free, outdoor access/pastured layers. They are as follows:

- Spotty Liver Disease (SLD) – Flocks with this condition experience a five to 20% drop in egg production over a three to four-week period and have 0.5 to 5% mortality. Missouri and Arkansas have most of the cases although breaks have been seen in other high density cage-free, outdoor access areas. This is also a major problem in pastured flocks in Australia where the cause was determined to be due to Campylobacter hepaticus. Two major vaccine companies are producing autogenous vaccine that is showing great promise in effectively reducing this problem.

- Egg Drop Syndrome (EDS) – Since last year’s meeting, EDS has become a major issue in two counties in northeast Indiana where a very dense population of brown egg producers are producing eggs for the specialty egg market. There have been 51 brown egg layer flocks on 40 premises affected in a little over a year. In an effort to eradicate the disease, flocks were initially depopulated for the
first several months until it was determined the virus could not be eliminated from
a premise consistently. Flocks now are being molted to bring back shell quality
quicker than if not molted. Imported inactivated vaccine was initially only allowed
to be used by permit by USDA and the state of Indiana at an EDS positive lay
facility after the birds were housed. This effort proved unsuccessful in limiting the
infection or clinical signs hence since July 5, the vaccine is now being allowed in
pullets for administration at least three weeks before move to lay.

A sixth premise broke with this disease in Pennsylvania this past year resulting in
50% loss of production due to shell-less and poor shell quality eggs. USDA and the state
of Pennsylvania are allowing the use of the imported inactivated by permit for pullets being
grown to populate EDS positive premises.

- **Fowl Cholera** – Fowl cholera appears to be on the increase as breaks have
  been seen this past year in areas where the disease has not been seen
  previously. Breaks are not confined to flocks with outdoor access and are being
  seen in confined cage-free flocks. Treatment with vaccination in the face of the
  outbreak with the live vaccine by wingweb has met with success in some organic
  flocks. Antibiotic therapy in conventional flocks has also been successful in the
  short term but chronic mortality and suppression of production returns. Increasing
  the percent of flocks being vaccinated during growing with live and/or inactivated
  vaccines should help decrease this problem.

- **Focal Ulcerative Dermatitis Syndrome (FUDS)** – This syndrome continues to
  cause losses in not only brown cage-free flocks but also in white egg cage-free
  flocks in western Ohio. Purina/Land ‘O Lakes conducted microbiome studies of
  the skin of affected and non-affected birds and determined the causative agent
  to likely be *Staphylococcus agnetis*. The disease is characterized by an ulcer in
  the middle of the back. The open wound leads to bacterial infections and very
  high mortality rates from 0.5 to 4% per week. The problem will persist in a flock
  for 5 to 20 weeks. Some flocks have had a total of 50% mortality over a 20-week
  period. There has been no association found with scratches, nervous birds,
  rodent activity, insect activity. A probiotic using strains of *Bacillus subtilis* that
  inhibited the growth of *S agnetis* invitro showed promising results in controlling or
  preventing this disease.
• **Bedbugs** – Cage-free operations that are infested with bedbugs in the Northeast and Midwest U.S. have been reported and concerns for house worker, bird movement, and other persons transfer of bedbugs to their dwellings is high. Some egg producers have been rejected by crews for consideration for moving their birds that have bedbugs.

• **Erysipelas** – This bacterial disease caused by *Erysipelothrix rhusiopathae* has caused serious mortality (up to 50% in some flocks) in numerous cage-free brown egg flocks in the northeast, Midwest, and South. The disease strikes flocks over 50 weeks of age and is much more serious in poorly feathered flocks. Vaccination with live and/or autogenous bacterin has been successful in preventing the problem.

**Egg Industry Economic Conditions:**
The egg industry has been highly profitable for the last 11 months from record-breaking prices due to seasonal increases and HPAI. The loss of 35 million layers has had a significant effect on the supply of eggs with demand remaining high.

*Information and Graphs from the Egg Industry Center, August 2022*

![Figure 5: Estimated Cost of Production and Producer Non-Processed Egg Value in U.S. (Quarterly 2011-2022)](image)

As can be seen from this graph below, the number of conventional, caged layers declined with additional capacity in the cage-free sector. The number of cage-free layers has stalled due to the inability to receive shipments of cage-free layer equipment from Europe due to Covid related labor issues and the war in the Ukraine.

![Figure 6: U.S. Cage-Free and Conventional Layers](image)

*Source: USDA AMS*
Turkey Industry Report
Lindy Froebel, National Turkey Federation
Prepared by: Steven R. Clark, Huvepharma, Inc.

In preparation for this annual report, the subcommittee chairman, Dr. Clark, surveyed turkey industry professionals and veterinarians representing (n = 18) the U.S. turkey production regarding the health status of turkeys produced in August 2021 through August 2022. Surveys were collected by a third party, blinded, and provided to Clark for analysis. The turkey industry reports several disease challenges for this 12-month period varying by geographic regions within a state and across the United States. The 2022 survey tallied 175.8 million head (81%) of the 216.5 million USDA reported raised. This report lists, Table 1, the challenges by disease and issues. Of particular interest in 2022 are issues with lack of efficacious drugs (#1), clostridial dermatitis (#2), colibacillosis (#3) and coccidiosis (#9). The most notable changes since 2021 were the addition of Highly Pathogenic Avian Influenza (HPAI) and Cholera to the top-10 and Blackhead jumped seven positions. This year respiratory diseases made up five of the top-10 rankings, Table 1B. New to this year’s survey was differentiating Avian Influenza into Highly Pathogenic (HPAI) and Low Pathogenic (LPAI) ranking.

Again, this year the lack of approved, efficacious drugs ranks highest on the challenges experienced by the turkey industry survey participants and is likely a contributor to all turkey health challenges and disease issues that follow it on the ranking list. A few examples of the impact of this challenge include there being only one approved commercial live vaccination for turkey coccidiosis, approved commercial turkey Salmonella vaccines only including group B serotypes and the lack of an approved, efficacious molecule to treat blackhead disease following the withdrawal of the last known effective molecule against the disease in 2015. In addition, some supply chain disruptions have continued to impact the availability of certain animal health products similarly to what was reported in 2021.

The turkey industry has been significantly impacted by HPAI in 2022, and this is reflected in the survey results with HPAI ranking as a top challenge of concern. As of September 26, at least 158 commercial turkey premises have tested HPAI-positive, resulting in the loss of at least 6.8 million turkeys as part of the ongoing outbreak. Based on 2021 production volumes the loss accounts for approximately 3.1% of annual production. Turkey cases have occurred in 13 states, with Minnesota (44.3%), South Dakota (23.4%), Iowa (5.7%) and Wisconsin (4.4%) having the most cases reported.

In comparison, 7.4 million turkeys were lost from 160 commercial turkey premises in 2015 during arguably one of the most significant animal health challenges in the United States. The industry continues to focus on implementing strict biosecurity practices and recall on lessons learned from the 2015 outbreak to reduce virus introduction to commercial turkey premises to minimize the impact of HPAI. HPAI cases trended down from April to June this year, however, cases have increased entering the fall season.

Although the industry’s ability to prevent and respond to HPAI has greatly improved, additional research on eradication and control is needed, especially as the new viruses enter the ecosystem and mutate. The National Turkey Federation (NTF) is a major advocate for the National Animal Disease Preparedness and Response Program (NADPRP) created by the 2018 Farm Bill. The program has invested $22.1 million to support disease prevention and preparedness projects. In 2021, USDA’s Animal and Plant Health Inspection Service (APHIS) made $7.6 million for 35 projects focused on (1) developing vaccination plans for FAD outbreaks, (2) supporting animal movement decisions in an FAD outbreak, or (3) delivering outreach and education on animal disease preparedness and response topics to targeted audiences. In 2022, APHIS announced it will make up to $17 million available to (1) Develop, Enhance, and Exercise State and Tribal Animal Disease Outbreak Emergency Response Plans, (2) Support Livestock1 and

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Poultry Biosecurity, (3) Enhance Depopulation, Carcass Disposal, and Decontamination Capabilities, (4) Support Animal Movement Decisions in a Disease Outbreak, (5) Enhance Animal Disease Traceability for a Disease Outbreak, (6) Support Outreach and Education on Animal Disease Prevention, Preparedness, and Response Topics, (7) Develop and Deliver Training and Exercises for Animal Agriculture Sector Responders, and (8) Commodity-Specific Topics, including (a) projects to advance the development of sheep and goat vaccines, and (b) projects to prevent and prepare for foreign and emerging aquatic animal diseases.

Looking ahead to the upcoming 2023 Farm Bill, NTF is again working with a broad coalition to encourage Congress to build on this foreign zoonotic prevention program and further focus on preventing and limiting foreign disease before it reaches our domestic livestock and poultry. Specific areas the turkey industry would like to prioritize in the Farm Bill are on biosecurity, depopulation, disposal, repopulation, research opportunities.

Indemnity payments are made for animals taken or destroyed to control or eradicate diseases such as HPAI. NTF is appreciative of the indemnification program implemented by USDA and APHIS along with the strong congressional support of the turkey industry as the industry manages through the outbreak. While indemnity values traditionally represented only conventional commercial turkey production APHIS earlier this year created turkey production subcategories of premium value, including turkey breeders and organic turkeys using data from a limited survey. In September, APHIS published an advance notice of proposed rulemaking (ANPR) to solicit public comments on a new approach to indemnity valuation and a new indemnity framework. NTF plans to submit comment to inform rulemaking on a program that has been critical in the ongoing outbreak.

Blackhead jumped up to #14 from #21 the prior year, but the number of reported cases decreased by 21% (Table 2). NTF was successful in securing $1 million in funding and support language in the Fiscal Year 2022 Appropriations process in support of Histomoniasis (Blackhead disease) research. The language encourages USDA's Agricultural Research Service (ARS) to undertake a robust research campaign to develop treatment and prevention methods for Blackhead. The language and funding were a critical first step in helping initiate federally supported research and move forward in finding viable options to reduce incidences of Blackhead. In addition, report language was included in the Fiscal Year 2023 to encourage ARS to coordinate development of a Histomonas research program with intent to develop new prevention and treatment options. ARS is working with the University of Arkansas Division of Agriculture to develop such a program.

Salmonella mitigation remains a top priority for the industry and continues to be reported high on the industry survey despite it not being a significant health concern for turkeys. NTF continues to facilitate industry meetings for members to discuss challenges and best practices for reducing Salmonella throughout the production and processing of turkeys. USDA's Food Safety Inspection Service (FSIS) is expected to announce a new policy regarding Salmonella regulations in the fall of 2022. In a presentation at the 2022 International Association for Food Protection Annual Meeting, Deputy Under Secretary Sandra Eskin discussed FSIS's new Salmonella framework for poultry will focus on controlling Salmonella when receiving birds, at slaughter, and before products leave the establishment.

Reported cases of Mycoplasma synoviae (MS) and M. gallisepticum (MG) decreased. Cases of Turkey Reovirus Digital Flexor Tendon Rupture decreased for two consecutive years and its ranking said the same (#11). Added to the survey in 2021 Streptococcus galolyticus (aka, S. bovis) increased one and THRV (Turkey Hepatitis Reovirus) dropped one ranking in 2022 to #16 and #19 respectively. Turkey Coronavirus (TCV) ranked #28, cases increased 292% due to an on-going outbreak in one geographic area. TCV is also known as Coronavirus Enteritis of Turkeys, Bluecomb, Mud Fever, or Transmissible Enteritis.
Coccidiosis continues to rank high most likely reflecting the industry’s raised without antibiotics (RWA), antibiotic free (ABF) and no antibiotics ever (NAE) market. RWA and NAE programs do not permit the use of ionophore anticoccidials and some programs prohibit FDA approved chemical anticoccidials, so anticoccidial programs consist of alternative phytopharmaceuticals or vaccination. An effective coccidiosis control program in turkeys involves the use of anticoccidial medications, and/or phytonutrients, and/or live vaccines and the subsequent development of immunity. Table 4 summarizes the U.S. turkey production coccidia control programs. Coccidia vaccination is with one USDA conditionally approved commercial turkey coccidiosis live vaccine or some colleagues utilize autogenous coccidiosis vaccines. Nutritional dietary supplementation with phytonutrients is either via in-feed application or drinking water administration. Programs may utilize phytonutrients in addition to the current anticoccidial program, to potentiate the possible benefits, or as the sole supplement for coccidia control. Some phytonutrients have purported activity against coccidia. Phytonutrients consist of ‘alternative’ products including organic acids, yeast, phytonutrients from plant extracts (saponin, yucca, etc.) and essential oils (oregano, carvacrol, thymol, cinnamaldehyde, capsicum oleoresin, turmeric oleoresin). Essential oils may be natural extracts or synthetic nature-identical compounds.

In 2022, NTF created the NTF Research Committee, a committee made up of professionals in the academic and government sectors that conduct research specific to the turkey industry. Members of the committee receive updates from NTF on association efforts and priorities. In addition, members are invited to research discussions with industry members to discuss industry priorities and identify meaningful solutions to turkey-related issues, including many of the animal health challenges and diseases covered in this industry survey.

The industry was surveyed (only 17 of 18 reported) to classify their antibiotic programs (Table 3) defined by how anticoccidials and antimicrobials are allowed. Twenty-five percent (25%) of the industry turkeys were reared NAE/ABF category, same as 2021, as Conventional Use programs decreased to 37% from 38% (2021). Conventional/Full Use program permits the proper use of any FDA approved antibiotics, administered in the feed or drinking water, including ionophores, bacitracin, flavomycin, and /or those deemed medically important to humans by FDA. The third category titled “No Growth Promotants, CRAU/CRAU-like” (Certified Responsible Antibiotic Use), only permits the therapeutic uses under the prescription and supervision of a veterinarian. Thirty-seven percent (37%) of those turkeys reported were CRAU programs. No Antibiotics Ever (NAE) /Antibiotic Free (ABF, RWA), does not permit either in-feed or in-water antibiotics. FDA has stated that ionophore anticoccidials are antibiotics.

Robert M. Califf M.D. was named Commissioner of Food and Drugs in February 2022. Since, the agency’s focus has remained similar to what it was industry under Acting Commissioner Janet Woodcock. FDA continues to move forward with many activities that will likely impact the turkey industry. A second concept paper on the process and criteria for ranking antimicrobial drugs based on their importance in human medicine (GFI #152 Appendix A) and an approach for defining durations of use for medically important antimicrobial drugs intended for use in or on feed are still expected to publish.

In 2021, turkey production decreased from 7,192,443 in 2020 to 6,960,919 pounds (live weight) and decreased to 216,500,000 head with an average live weight of 32.28 lbs.¹ Per capita consumption for turkey products decreased from 15.3 in 2021 to 15.8 in 2020.²

Sources:

¹ USDA Poultry Slaughter 2021 Annual Summary, Feb. 2022
Table 1. Turkey health survey (August 2021 - 2022) of professionals in U.S. turkey production (n = 18, head reporting = 175.8 million) ranking current disease issues (1= no issue to 5 = severe problem). Data on file.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Score Average (1-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of approved, efficacious drugs</td>
<td>4.8</td>
</tr>
<tr>
<td>Clostridial Dermatitis (Cellulitis)</td>
<td>4.3</td>
</tr>
<tr>
<td>Colibacillosis</td>
<td>3.9</td>
</tr>
<tr>
<td>Avian Influenza, High Path (HPAI)</td>
<td>3.8</td>
</tr>
<tr>
<td><em>Ornithobacterium rhinotracheale</em> (ORT)</td>
<td>3.7</td>
</tr>
<tr>
<td><em>Bordetella avium</em></td>
<td>3.2</td>
</tr>
<tr>
<td><em>Salmonella</em></td>
<td>3.2</td>
</tr>
<tr>
<td>Cholera</td>
<td>2.9</td>
</tr>
<tr>
<td>Coccidiosis</td>
<td>2.9</td>
</tr>
<tr>
<td>Leg Problems</td>
<td>2.8</td>
</tr>
<tr>
<td>TR-DFTR (Turkey Reovirus Digital Flexor Tendon Rupture)</td>
<td>2.8</td>
</tr>
<tr>
<td>Late Mortality</td>
<td>2.7</td>
</tr>
<tr>
<td>Protozoal Enteritis (Flagellated)</td>
<td>2.7</td>
</tr>
<tr>
<td>Blackhead (Histomoniasis)</td>
<td>2.7</td>
</tr>
<tr>
<td>Cannibalism</td>
<td>2.6</td>
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<tr>
<td><em>Streptococcus galloyticus</em> (aka, S. bovis)</td>
<td>2.6</td>
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<tr>
<td>Tibial Dyschondroplasia (TDC, Osteochondrosis)</td>
<td>2.5</td>
</tr>
<tr>
<td>Poult Enteritis of unknown etiologies</td>
<td>2.4</td>
</tr>
<tr>
<td>THRV (Turkey Hepatitis Reovirus)</td>
<td>2.4</td>
</tr>
<tr>
<td>Round Worms (<em>Ascaridia dissimilis</em>)</td>
<td>2.3</td>
</tr>
<tr>
<td>Heat Stress/Mortality</td>
<td>2.1</td>
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<tr>
<td>Osteomyelitis (OM)</td>
<td>2.0</td>
</tr>
<tr>
<td>Breast Blisters and Breast Buttons</td>
<td>1.9</td>
</tr>
<tr>
<td>Bleeders (aortic, hepatic ruptures)</td>
<td>1.8</td>
</tr>
<tr>
<td>Necrotic enteritis</td>
<td>1.8</td>
</tr>
<tr>
<td>Shaky Leg Syndrome</td>
<td>1.8</td>
</tr>
<tr>
<td>PEMS (Poult Enteritis Mortality Syndrome)</td>
<td>1.8</td>
</tr>
<tr>
<td>Turkey Coronavirus (TCV, Bluecomb)</td>
<td>1.8</td>
</tr>
<tr>
<td><em>Mycoplasma synoviae</em> (MS)</td>
<td>1.7</td>
</tr>
<tr>
<td>Avian Influenza, Low Path (LPAI)</td>
<td>1.7</td>
</tr>
<tr>
<td>Newcastle Disease Virus (NDV)</td>
<td>1.7</td>
</tr>
<tr>
<td><em>Mycoplasma gallisepticum</em> (MG)</td>
<td>1.5</td>
</tr>
<tr>
<td>Fractures</td>
<td>1.3</td>
</tr>
<tr>
<td>H3N2 (H1N1) Swine Influenza</td>
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<tr>
<td>Erysipelas</td>
<td>1.2</td>
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<tr>
<td><em>Mycoplasma iowae</em> (MI)</td>
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<tr>
<td><em>Mycoplasma meleagridis</em> (MM)</td>
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</tr>
<tr>
<td>Avian Metapneumovirus</td>
<td>1.1</td>
</tr>
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</table>
### Table 1A. Enteric Diseases Ranking for 2022.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Score Average (1-5)</th>
<th>Overall Rank (1-39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coccidiosis</td>
<td>2.9</td>
<td>9</td>
</tr>
<tr>
<td>Protozoal Enteritis (Flagellated)</td>
<td>2.7</td>
<td>13</td>
</tr>
<tr>
<td>Blackhead (Histomoniasis)</td>
<td>2.7</td>
<td>14</td>
</tr>
<tr>
<td>Poult Enteritis of unknown etiologies</td>
<td>2.4</td>
<td>18</td>
</tr>
<tr>
<td>Round Worms (<em>Ascaridia dissimilis</em>)</td>
<td>2.3</td>
<td>20</td>
</tr>
<tr>
<td>Necrotic enteritis</td>
<td>1.8</td>
<td>25</td>
</tr>
<tr>
<td>PEMS (Poult Enteritis Mortality Syndrome)</td>
<td>1.8</td>
<td>27</td>
</tr>
<tr>
<td>Turkey Coronavirus (TCV, Bluecomb)</td>
<td>1.8</td>
<td>28</td>
</tr>
</tbody>
</table>

### Table 1B. Respiratory Diseases Ranking for 2022.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Score Average (1-5)</th>
<th>Overall Rank (1-39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colibacillosis</td>
<td>3.9</td>
<td>3</td>
</tr>
<tr>
<td>Avian Influenza, High Path (HPAI)</td>
<td>3.8</td>
<td>4</td>
</tr>
<tr>
<td><em>Ornithobacterium rhinotracheale</em> (ORT)</td>
<td>3.7</td>
<td>5</td>
</tr>
<tr>
<td><em>Bordetella avium</em></td>
<td>3.2</td>
<td>6</td>
</tr>
<tr>
<td>Cholera</td>
<td>2.9</td>
<td>8</td>
</tr>
<tr>
<td><em>Mycoplasma synoviae</em> (MS)</td>
<td>1.7</td>
<td>29</td>
</tr>
<tr>
<td>Avian Influenza, Low Path (LPAI)</td>
<td>1.7</td>
<td>30</td>
</tr>
<tr>
<td>Newcastle Disease Virus (NDV)</td>
<td>1.7</td>
<td>31</td>
</tr>
<tr>
<td><em>Mycoplasma gallisepticum</em> (MG)</td>
<td>1.5</td>
<td>32</td>
</tr>
<tr>
<td>H3N2 (H1N1) Swine Influenza</td>
<td>1.2</td>
<td>34</td>
</tr>
<tr>
<td>Avian Metapneumovirus</td>
<td>1.1</td>
<td>38</td>
</tr>
</tbody>
</table>

### Table 2. Turkey health survey (August 2021 - 2022) of professionals in U.S. turkey production (n = 18, head reporting = 175.8 million) reporting cases of diseases. Data on file.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackhead (Histomoniasis)</td>
<td>103</td>
<td>130</td>
<td>82</td>
<td>96</td>
<td>127</td>
<td>109</td>
<td>101</td>
</tr>
<tr>
<td><em>Mycoplasma synoviae</em> (MS)</td>
<td>14</td>
<td>34</td>
<td>21</td>
<td>25</td>
<td>35</td>
<td>33</td>
<td>20</td>
</tr>
<tr>
<td>Turkey Coronavirus (TCV)</td>
<td>459</td>
<td>117</td>
<td>27</td>
<td>95</td>
<td>185</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Turkey Reovirus Digital Flexor Tendon Rupture</td>
<td>170</td>
<td>239</td>
<td>548</td>
<td>486</td>
<td>234</td>
<td>182</td>
<td>31</td>
</tr>
<tr>
<td><em>Mycoplasma gallisepticum</em> (MG)</td>
<td>8</td>
<td>78</td>
<td>31</td>
<td>30</td>
<td>50</td>
<td>52</td>
<td>29</td>
</tr>
</tbody>
</table>
Table 3. Turkey health survey (August 2021 –2022) of professionals in US turkey production (n = 17, head reporting = 146 million) by antibiotic program. Data on file.

<table>
<thead>
<tr>
<th>Program</th>
<th>2022</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional/Full Use¹</td>
<td>37%</td>
<td>38%</td>
</tr>
<tr>
<td>No Growth Promotants, CRAU/CRAU-like²</td>
<td>37%</td>
<td>36%</td>
</tr>
<tr>
<td>NAE /ABF, RWA³</td>
<td>25%</td>
<td>25%</td>
</tr>
</tbody>
</table>

¹ Conventional/Full Use (any antibiotics, including ionophores, bacitracin, flavomycin, and/or those deemed medically important to humans by FDA), allows in-feed and in-water administration of antibiotics.

² No Growth Promotants, CRAU/CRAU-like (Certified Responsible Antibiotic Use), permits only therapeutic uses.

³ No Antibiotics Ever (NAE) /Antibiotic Free (ABF), Raised Without Antibiotics (RWA), does not use neither in-feed nor in-water antibiotics. No hatchery injection of antibiotics.

Table 4. Turkey survey (August 2021 –2022) of professionals in US turkey production (n = 17, head reporting = 146 million) coccidia control programs. Does not total 100%. Alternatives (phytonutrients) and vaccines may be used to supplement the current ionophore or chemical anticoccidial program, or as the sole program for coccidia control. Data on file.

<table>
<thead>
<tr>
<th>Program</th>
<th>2022</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ionophore</td>
<td>58%</td>
<td>66%</td>
</tr>
<tr>
<td>Chemical</td>
<td>38%</td>
<td>33%</td>
</tr>
<tr>
<td>Alternative (Phytonutrients)</td>
<td>20%</td>
<td>54%</td>
</tr>
<tr>
<td>Vaccine</td>
<td>14%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Upland Gamebird Industry Report
Troy Laudenslager, Mahantongo Game Farms

Mr. Laudenslager presented on the Avian Influenza (AI) experiences in the gamebird industry, with discussion over the new Subpart J of National Poultry Improvement Plan, Secure Upland Game Supply, and provided an overview of the gamebird industry and biosecurity practices employed by providing examples from his own facility.

National Veterinary Services Laboratories (NVSL) Bacteriology Diagnostics Report
Brenda Morningstar-Shaw, USDA-APHIS, Veterinary Services (VS), NVSL

Salmonella serotyping
The Bacterial Identification section within the Diagnostic Bacteriology and Pathobiology Laboratory of the National Veterinary Services Laboratories (NVSL) routinely performs serotyping of Salmonella isolates submitted by private, state, and federal laboratories as well as veterinarians, researchers, and other animal health officials. This report summarizes Salmonella serotyping submissions to the NVSL from January 1 through December 31, 2021, originating from poultry.

Salmonella isolates are identified as clinical (clinical signs of salmonellosis from primary or secondary infection) or non-clinical (flock monitoring programs, environmental sources, feed). Serotyping data from isolates submitted for research purposes are not included in the summary.

From January 1 to December 31, 2021, 10,943 isolates were received for Salmonella
serotyping. Of those, 2,976 isolates were from chicken sources and 1,038 isolates were from turkey sources. The most commonly isolated serotypes from chicken and turkey are listed in Tables 1 and 2, respectively.

**Salmonella Enteritidis**

From January 1 to December 31, 2021, 2,976 *Salmonella* isolates were received from chickens and their environment for identification of serotype. This was a 3% increase in chicken submissions from 2020. *Salmonella* Enteritidis was isolated in 13% of these isolates and remains in the top five serotypes observed in both clinical and non-clinical submissions. A summary of the number of *S. Enteritidis* isolates identified from chicken during the previous five years is shown in Table 3.

**Salmonella Pullorum and Gallinarum**

The NVSL received 100 samples for *Salmonella* Pullorum and Gallinarum serological testing in 2021, a decrease of 6% from 2020. No isolates of *Salmonella* Pullorum or Gallinarum were identified or confirmed at the laboratory in 2021. The NVSL provided 2,845 mL of *S.* Pullorum tube antigen, a 41% decrease from 2020; 1,975 mL of *S.* Pullorum stained microtiter antigen, a 42% decrease from 2020; and 344 mL of control antisera, a 13% increase from 2020, to testing laboratories between January 1 and December 31, 2021.

**Pasteurella**

The NVSL received 304 isolates for *Pasteurella* multocida Gel-Diffusion Precipitin testing, which was a 105% increase from 2020. Twenty-nine isolates were identified as type 3 in 2021. A summary of the results is provided in Table 4. Additionally, 181 isolates were received for P. multocida DNA fingerprinting, which was an increase of 51% from 2020. The NVSL supplied 85 mL of P. multocida typing sera and 49 cultures to testing laboratories.

**Mycoplasma**

The NVSL received 88 samples for avian *Mycoplasma* hemagglutination inhibition testing in 2021, a decrease of 2% from 2020. In addition, 816 mL of *Mycoplasma* control antisera and 370 mL of *Mycoplasma* hemagglutination antigen were supplied to testing laboratories. Information on *Mycoplasma* reagents provided is shown in Tables 5 and 6.

### Table 1: Most common serotypes in 2021: Chicken

<table>
<thead>
<tr>
<th>Serotype</th>
<th>Serotype</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enteritidis</td>
<td>Senftenberg</td>
</tr>
<tr>
<td>Kentucky</td>
<td>Enteritidis</td>
</tr>
<tr>
<td>Typhimurium</td>
<td>Thompson</td>
</tr>
<tr>
<td>Infantis</td>
<td>Mbandaka</td>
</tr>
<tr>
<td>Mbandaka</td>
<td>Kentucky</td>
</tr>
</tbody>
</table>

### Table 2: Most common serotypes in 2021: Turkeys

<table>
<thead>
<tr>
<th>Serotype</th>
<th>Serotype</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typhimurium</td>
<td>Ouakam</td>
</tr>
<tr>
<td>Muenchen</td>
<td>Montevideo</td>
</tr>
<tr>
<td>Infantis</td>
<td>Litchfield</td>
</tr>
<tr>
<td>Senftenberg</td>
<td>Alachua</td>
</tr>
<tr>
<td>Agona</td>
<td>Albany</td>
</tr>
</tbody>
</table>
Table 3: Number of Salmonella Enteritidis isolates in chicken per calendar year at the NVSL

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. chicken isolates</td>
<td>4,397</td>
<td>4,742</td>
<td>3,011</td>
<td>2,897</td>
<td>2,976</td>
</tr>
<tr>
<td>No. chicken SE isolates</td>
<td>358</td>
<td>418</td>
<td>370</td>
<td>492</td>
<td>407</td>
</tr>
<tr>
<td>SE percent of all isolates</td>
<td>8%</td>
<td>9%</td>
<td>12%</td>
<td>17%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Table 4: Somatic types of Pasteurella multocida observed at the NVSL per calendar year

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>37</td>
<td>35</td>
<td>25</td>
<td>25</td>
<td>38</td>
</tr>
<tr>
<td>Type 3</td>
<td>14</td>
<td>51</td>
<td>24</td>
<td>25</td>
<td>29</td>
</tr>
<tr>
<td>Type 3,4</td>
<td>14</td>
<td>0</td>
<td>14</td>
<td>20</td>
<td>31</td>
</tr>
<tr>
<td>All other</td>
<td>118</td>
<td>81</td>
<td>67</td>
<td>78</td>
<td>206</td>
</tr>
<tr>
<td>TOTAL</td>
<td>183</td>
<td>167</td>
<td>130</td>
<td>148</td>
<td>304</td>
</tr>
</tbody>
</table>

Table 5: Mycoplasma antisera (mL) provided by NVSL per calendar year

<table>
<thead>
<tr>
<th>Antisera</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. gallisepticum</td>
<td>376</td>
<td>236</td>
<td>282</td>
<td>292</td>
<td>284</td>
</tr>
<tr>
<td>M. meleagrdis</td>
<td>58</td>
<td>48</td>
<td>46</td>
<td>54</td>
<td>44</td>
</tr>
<tr>
<td>M. synoviae</td>
<td>362</td>
<td>192</td>
<td>178</td>
<td>180</td>
<td>242</td>
</tr>
<tr>
<td>Negative</td>
<td>340</td>
<td>262</td>
<td>266</td>
<td>276</td>
<td>246</td>
</tr>
<tr>
<td>Total</td>
<td>1,136</td>
<td>738</td>
<td>772</td>
<td>802</td>
<td>816</td>
</tr>
</tbody>
</table>

Table 6: Mycoplasma antigen (mL) provided by NVSL per calendar year

<table>
<thead>
<tr>
<th>Antigen</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. gallisepticum</td>
<td>290</td>
<td>145</td>
<td>165</td>
<td>190</td>
<td>160</td>
</tr>
<tr>
<td>M. meleagrdis</td>
<td>90</td>
<td>45</td>
<td>25</td>
<td>40</td>
<td>65</td>
</tr>
<tr>
<td>M. synoviae</td>
<td>235</td>
<td>125</td>
<td>165</td>
<td>180</td>
<td>145</td>
</tr>
<tr>
<td>Total</td>
<td>615</td>
<td>315</td>
<td>355</td>
<td>410</td>
<td>370</td>
</tr>
</tbody>
</table>

Sources:

National Poultry Improvement Plan (NPIP) Update
Katy Burden, USDA-APHIS, Veterinary Services (VS), NPIP
Prepared with: Dr. Elena Behnke, USDA/APHIS/VS/ASEP, Conyers, GA

breeding flocks, and U.S. H5/H7 Avian Influenza Monitored for commercial (production) poultry flocks.

Pullorum-Typhoid Status: There were no isolations of *Salmonella* pullorum in commercial poultry in FY2018, FY2019, FY2020, FY2021 or FY2022. There were no isolations of *Salmonella* pullorum in backyard birds in, FY2018, FY2019, FY2020, FY2021 or FY2022. There have been no isolations of *Salmonella* gallinarum since 1987 in any type of poultry in the U.S. U.S. Pullorum-Typhoid Clean participating hatcheries include: 253 egg and meat-type chicken hatcheries, 41 turkey hatcheries, and 921 waterfowl, exhibition poultry and game bird hatcheries.

NPIP U.S. Pullorum-Typhoid Clean Participating Breeding Flocks and Number of Birds are listed below:

- **Egg-Type Chickens** 412 Flocks with 13,384,314 birds
- **Meat-Type Chickens** 5,566 Flocks with 115,622,651 birds
- **Turkeys** 416 Flocks with 4,103,434 birds
- **Waterfowl, Exhibition Poultry, and Game Birds** 6,092 Flocks with 8,901,109 birds
- **Meat-Type Waterfowl** 99 Flocks with 371,322 birds

Avian Influenza Status:

From July 1, 2021–June 30, 2022, there were 5 isolations of confirmed Low Pathogenicity Avian Influenza in commercial poultry in the US:
- CA H7N3 LPAI – Commercial Quail/Duck Layer – 10/04/2021
- CA H5N2 LPAI – Commercial Duck Layer – 10/08/2021
- MN H5N3 LPAI – Commercial Meat-type Turkey – 11/22/2021
- UT H7N3 LPAI – Commercial Meat-type Turkey – 4/30/2022
- UT H7N3 LPAI – Commercial Meat-type Turkey – 5/7/2022

**Table 1:** 2022 NPIP U.S. Avian Influenza Clean and U.S. H5/H7 Clean Participating Breeding Flocks; and U.S. H5/H7 Avian Influenza Monitored Participating Commercial Flocks:

<table>
<thead>
<tr>
<th>Subpart</th>
<th>Flocks</th>
<th>Birds</th>
<th>Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egg-Type Chicken Breeders</td>
<td>432</td>
<td>1,383,766</td>
<td>31,748</td>
</tr>
<tr>
<td>Table-Egg Layers-Commercial</td>
<td>7,558</td>
<td>856,128,760</td>
<td>122,311</td>
</tr>
<tr>
<td>Meat-Type Chicken Breeders</td>
<td>13,404</td>
<td>199,434,263</td>
<td>599,152</td>
</tr>
<tr>
<td>Meat-Type Chickens-Commercial</td>
<td>71,255</td>
<td>6,878,864,552</td>
<td>1,020,029</td>
</tr>
<tr>
<td>Turkey Breeders</td>
<td>948</td>
<td>7,922,092</td>
<td>60,644</td>
</tr>
<tr>
<td>Turkeys-Commercial</td>
<td>8,922</td>
<td>152,890,219</td>
<td>136,203</td>
</tr>
<tr>
<td>Waterfowl, Upland Game birds, Exhibition Poultry</td>
<td>3,752</td>
<td>11,013,337</td>
<td>126,332</td>
</tr>
<tr>
<td>Upland Game birds, Waterfowl Commercial</td>
<td>2,320</td>
<td>49,376,744</td>
<td>31,922</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>108,591</td>
<td>8,157,013,733</td>
<td>2,128,341</td>
</tr>
</tbody>
</table>

201
Table 2: 2022 MG, MS, and MM positive breeding flocks:

<table>
<thead>
<tr>
<th>Mycoplasma gallisepticum, Mycoplasma synoviae, and Mycoplasma meleagridis positive breeding flocks - National Poultry Improvement Plan FY2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>WEGBY</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>M. gallisepticum</td>
</tr>
<tr>
<td>M. synoviae</td>
</tr>
<tr>
<td>M. meleagridis</td>
</tr>
</tbody>
</table>

Authorized Laboratories Activities: The National Veterinary Services Laboratory issues a group D Salmonella check test and an Avian Influenza check test for the Agar Gel Immunodiffusion test for Authorized Labs of the NPIP. A check test for Mycoplasma is offered through the Poultry Diagnostic and Research Center. In CY 2022, the AI check test and the Salmonella Group D tests are being offered.

Laboratory training provided to the authorized laboratories included an in-person Avian Influenza Diagnostic Workshop in FY2022, in July.

Multistate Investigations of Human Salmonella Illnesses Linked to Backyard Poultry

Sean Stapleton, Centers of Disease Control (CDC), Enteric Zoonoses Activity (EZA)
Prepared with: Kathy Benedict, DVM, PhD, CDC-EZA

Investigating Multistate Salmonella Outbreaks Linked to Backyard Poultry — Detection, data, and partners

G. Sean Stapleton, Kaylea Nemechek, Caroline Habrun, Joshua Brandenburg, Sybil Masse, Zachary Ellison, Lauren Gollarza, Marta Zlotnick, Beth Tolar, Jason Folster, Megin Nichols, Katharine Benedict

BACKGROUND: Multistate Salmonella illness outbreaks linked to contact with backyard poultry have continued to increase in size over the last decade. Backyard poultry, such as chickens and ducks, can carry multiple Salmonella serotypes even if the birds look healthy and clean. Investigation of multistate Salmonella illness outbreaks can provide valuable information to identify sources of illness and Salmonella prevention strategies. We describe backyard poultry-associated outbreaks and the partners involved in managing the risk of Salmonella infection linked to backyard poultry ownership.

METHODS: Public health investigators used PulseNet, the national molecular subtyping network for enteric disease surveillance, to identify illness outbreaks. An outbreak-associated case was defined as Salmonella infection yielding an isolate highly related to one of the outbreak strains by whole genome sequencing with isolation dates beginning February 3, 2022. State and local public health officials interviewed people about animal exposures during the week before illness onset and collected information about poultry purchase locations, including feedstores, auctions, and hatcheries. Public health officials from 11 states conducted environmental sampling for Salmonella.

RESULTS: CDC and state public health officials investigated 11 backyard poultry-associated multistate outbreaks (ranging in size from 7 to 340 cases) of Salmonella infections with serotypes of Enteritidis, Hadar, I 4,[5],12:i:-, Indiana, Infantis, Mbandaka, and Typhimurium. As of September 12, 2022, 1,191 people infected with one of the outbreak strains were reported from 50 states, the District of Columbia, and Puerto Rico. Six of the outbreak strains were isolated from poultry and their environments at sick people’s homes and at retail stores that sell backyard poultry. Of 399 people who reported...
contact with backyard poultry, 199 reported purchasing backyard poultry during 2022. Patients reported purchases from 199 different locations, and at least nine hatcheries supplied backyard poultry to these purchase locations.

CONCLUSIONS: Epidemiologic and laboratory data provided evidence that contact with backyard poultry continued to make people sick in 2022. Traceback of patient purchases allowed for the development of prevention strategies with industry partners to reduce the spread of *Salmonella*. State and local health and agriculture departments, federal agencies, local and corporate-owned feed stores, backyard poultry hatcheries and suppliers, and backyard poultry owners can all contribute to reducing human *Salmonella* illnesses linked to backyard poultry.

Live Bird Marketing System (LBMS) Avian Influenza Program FY2020 Working Group Report

Fidelis N. Hegngi, USDA, Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS)

Beginning in 1994, low pathogenicity avian influenza (LPAI) H7N2 proved to be endemic in live bird markets (LBM) in the northeastern United States. In 1999, the United States Department of Agriculture (USDA) established a LBMS working group to provide support to the states wanting to eliminate LPAI H7N2 that was persistent in the LBMs. On October 20, 2004, the USDA-APHIS-VS published uniform standards for H5 and H7 LPAI prevention and control in the LBMS to establish a more consistent approach by participating States in the control of LPAI in the LBMS. The LBMS Uniform standards have been revised in 2008, 2012, 2016, and 2020. The standards are currently being implemented.

State participation is voluntary; participating States will enact regulations necessary for compliance of their live bird markets (LBMs), producers, and distributors. All LBMs, producers, and distributors that supply the markets must be registered or licensed with the State and must allow Federal and State inspectors access to their facilities, birds, and records. These facilities must also have written biosecurity protocols in place. USDA-APHIS coordinates and administers the program. USDA-APHIS provides personnel and resources to assist States with implementation and compliance with program requirements.

In FY 2022 the LBM Working Group held its annual business meeting virtually for the second time. The meeting was attended by approximately 198 program participants including 60 USDA-APHIS-VS, field, district, and headquarters staff, 14 LBMS/poultry industry stakeholders, six State animal health diagnostic laboratory representatives, 2 Centers for Disease Control (CDC) and prevention representatives, 11 university representatives, and 105 State Department of Agriculture participants (representing 37 States). The meeting provides opportunities for continued program development, implementation, and advancement.

The working group also discussed:
1. LBMS Status and FY2022 Budget Update.
3. Updating Avian Influenza Cooperative Agreement Reporting.
4. Minnesota’s 2020 – 2021 Response to LPAI.
5. Pennsylvania LBM H5N3 LPAI Overview, Challenges and Lessons Learned.
6. Overview of VA LBMS.
7. Preparing, Planning and Opening Maryland’s First Live Bird Market.
8. Update PA LBMS Program.
9. NJ FAD Investigation at a Custom Slaughter establishment and Lessons Learned.
In FY 2022, the USDA continued to grow its Defend the Flock outreach and education campaign. The USDA utilized Defend the Flock social media accounts to disseminate information on the highly pathogenic avian influenza (HPAI) outbreak and share the importance of biosecurity. APHIS’ emergency response efforts were supported with the development and distribution of customized HPAI toolkits and direct outreach to Defend the Flock stakeholders and partners. In addition to these efforts, a paid media campaign was launched utilizing social media and search engine marketing.

The USDA continues to focus on growing the Flock Defender youth arm of the outreach campaign over the year. Currently, we are working on new content and reorganizing existing Flock Defender webpages, along with creating a new game page. We are finalizing the Flock Defender Educator’s Guide to accompany the game and a biosecurity workbook is currently in the design phase.

The USDA continues to produce two newsletters and hold two webinars each year, educating a wide variety of poultry audiences about key topics. In spring, a panel of speakers participated in a planned discussion on the threat of salmonella, but also included information on the outbreak of HPAI. The fall webinar will take place on September 22nd and speakers will discuss navigating through the current HPAI outbreak from prevention to recovery. The Fall/Winter issue of the Defend the Flock Biosecurity Bulletin newsletter includes an in-depth Q&A feature with Dr. Koren Custer, HPAI National Incident Coordinator at USDA-APHIS.

We conducted research on communities with early Anabaptist roots including the Amish, Mennonite, and Hutterites, and are developing an outreach plan to share information about HPAI and biosecurity based on the research and findings. We have started Hmong translations of Defend the Flock resource materials and plan to start Arabic translations in the next few weeks.

The 2023 Defend the Flock calendar is now available through online orders. Defend the Flock materials and information are available at www.aphis.usda.gov/animalhealth/defendtheflock.

LBMS surveillance remained a high USDA priority in FY 2022. As a result of the H5/H7 LPAI LBMS program and the surveillance and response efforts by VS and the States, the incidence of LPAI in LBMS in the United States, has decreased steadily. There was one detection of H5N3 LPAI in the U.S. LBMS in FY 2022.
USDA Response Lessons Learned
Barbara Porter-Spalding, National Preparedness and Incident Coordination (NPIC)

The focus of the AAR is to provide a description of the 2022 HPAI outbreak and to acquire critical information essential to improving the organizational and operational readiness for the next HPAI incursion into the United States. The analysis of response data will help all stakeholders to 1) understand preparedness gaps concerning state, inter-agency, and federal response, 2) gain insight on jurisdictional challenges, and 3) continue to develop/revise policies, plans, and procedures to mitigate HPAI spread.

Six distinct sources of data were analyzed to produce this report:
1. Written feedback from 729 respondents to the 2022 HPAI Responder Feedback Survey. These respondents identified 3,252 strengths and 3,049 areas for improvement.
4. Quantitative data from the National Veterinary Services Laboratory (NVSL) Laboratory Information Management System (LIMS).
5. Quantitative response data from the Wildlife Services (WS) online database.
6. Maps and other supporting response information from the APHIS 2022 HPAI Website.

These data sources were reviewed for strengths and areas for improvement, and possible corrective actions (recommendations) were identified. In addition, corrective actions associated with the areas for improvement, when provided, were recorded, and are included in this AAR/IP. Only strengths and areas of concern that appeared consistently in the data analysis were included in this AAR.

The strengths and areas for improvement presented in this AAR are based on feedback from responders engaged in various HPAI outbreak responses from February to August 2022. Interpreting that feedback was influenced by several factors:
- The responders were engaged in HPAI outbreaks in 39 states.
- The outbreaks occurred over a seven-month period.
- Responders had varying roles, responsibilities, and experience.
- Infected states and their poultry industries exhibit geographic and production type diversity.
- Initiating responses at different times and in different places impacted the availability of personnel and other resources.

When strengths and areas for improvement were identified across multiple VS Critical Response Activities, they were organized into themes to facilitate discussion and reduce redundancy in the AAR. Ten Themes were identified for this AAR:
1. Biosecurity
2. Cleaning and Disinfection (C&D)
3. Communication
4. Depopulation and Disposal
5. Information Management
6. Logistics
7. Mobilization and Demobilization
8. Permitting
9. Personnel
10. Training
Analysis of this information identified 18 areas for improvement, organized under ten unique Themes, and 64 recommendations for improvement. This AAR/IP will facilitate future preparedness planning and operations in the event HPAI returns. AAR/IPs developed by other response stakeholders (e.g., states, VS, IMTs, Industry, etc.) will expand on the findings in this AAR/IP, while providing targeted areas of concern and recommendations, specific to the entity authoring the AAR/IP. Follow up on the IPs developed from the 2022 HPAI response, addressing the corrective actions, will increase preparedness and operational capacity of the animal disease response community.

State HPAI Responses
*Bret Marsh*, Indiana Board of Animal Health  
*Kevin Brightbill*, Pennsylvania Department of Agriculture  
*Roger Dudley*, Nebraska Department of Agriculture

Each of the state veterinarians summarized their state’s perspectives and lessons learned with the 2022 HPAI outbreak in their respective poultry industries.

Emergency Mass Depopulation Strategies
*Jill Nezworski*, Blue House Veterinary LLC and *Carrie Cremers*, Jennie-O Turkey Store

The 2022 HPAI outbreak was dramatically different from the 2015 HPAI outbreak. In 2022 we saw an increase in the number of species of wild birds and wildlife affected. The 2022 outbreak also covered a larger geographic area and affected more backyard flocks than we saw in 2015. In 2022, it also appeared as though lateral spread was less of an issue than in 2015. Was this due to viral differences or timely depopulation?

Timely action and depopulation were key take aways from 2015. It appears that this was taken seriously nationwide in 2022. The hurdle to timely action is how large the scope of the outbreak is. As the number of cases increase, the ability to respond decreased due to numerous reasons such as labor and resources. It is important for state, federal and industry partners to plan, in some depth, for how they would respond if they had to handle multiple cases in a short time.

There were many opportunities identified in the 2022 response, but one positive step was the allowance of different depopulation strategies. Each option has its limitations but when all options are allowed, these limitations can be overcome. To improve the acceptability of these options there needs to be sharing of best practices to develop standardized operating procedures (SOPs). Standardized SOPs will allow for research and improvement. Also following depopulation, alignment is still needed for allowing the use of all American Veterinary Medical Association’s (AVMA) approved euthanasia methods.

Post HPAI Survey
*Julie Helm*, Clemson Livestock Poultry Health

Dr. Helm called for a request for states and industries affected by HPAI to participate in a HPAI Depopulation methods and procedures survey. This survey was due to a request from the National Assembly and sent to American Veterinary Medical Association’s (AVMA) Panel of Depopulation. The working group was formed by three industry veterinarians (Wileman, Scott, McCarter), three state representatives (Voss, Dudley, Zavala), led by Helm/Weathers, and to be summarized by Heard (U.S. Poultry and Egg Association) into a report.

NVSL Avian Influenza and Newcastle Disease Report
*Mia Kim Torchetti*, USDA-APHIS, VS, National Veterinary Services Laboratories (NVSL)

Dr. Torchetti presented on the comparison of the 2022 H5N1 HPAI to the 2015 H5Nx Outbreak from the National Veterinary Services Laboratory perspective.
Highly Pathogenic Avian Influenza (HPAI) Epidemiology

Amy Delgado, CEAH
Melissa Yates, USDA-APHIS-VS

The Center for Epidemiology and Animal Health (CEAH) is continually responding to the HPAI 2022 Outbreak by providing epidemiologic analyses, data overlays and visualizations, and models to deliver science-based information and solutions for decision-making and to inform the national response. From the initial-contact short epidemiologic interviews that were submitted as part of the outbreak investigation, we evaluated the patterns in risk factors, finding the most commonly reported risk factors were worker-related; however, movements of birds and bird products, disposal methods of deceased birds, visitors, shared equipment, and movement of manure were also analyzed. To respond to the request for statistically significant, high-impact risk factors, we are progressing on case control studies on a national scale in both layer and turkey operations. We are also exploring new questions and hope to have a better understanding of what previously identified factors are still significant and to potentially identify any new risk factors.

Notable in 2022 was the difference in affected backyard flocks from the 2014/2015 outbreak, and the significant increase in the amount of backyard flocks affected so far this year; whereas there were only 21 flocks in 2014/2015, there have been 244 flocks affected by late September 2022. This shift is likely driven by the much larger extent of virus presence and shedding by wild birds associated with these H5N1 viruses and an increased number of backyard birds overall, and by the messaging promoting the importance of reporting HPAI in backyard flocks by government and industry partners and increased social media information sharing.

To date, infections of backyard flocks have often indicated where virus is circulating among wild birds, but similar to the outbreak in 2014/2015, based on epidemiologic and phylogenetic analyses, backyard flocks have not been involved in onward transmission of the virus. Modeling work done in the Time to Introduction (TOI) analysis and Risk Interface Model show us transmission dynamics on site and how risk changes over time and space, respectively. The Risk Interface Model has been made public on the USGS Visualizing Avian Influenza Viruses website. Further information of the work done with in CEAH during the 2022 HPAI outbreak will be made available in the Interim Epidemiology Report.

Dr. Yates summarized the 2022 HPAI Outbreak report on Biosecurity and Epidemiological risk factor overview and separated it out for the four poultry industries (broilers, layers, turkeys, ducks).
Dr. Suarez, USDA, Agricultural Research Service (ARS), SEPRL presented updates at the SEPRL and summarized the global AI/ND perspective in his report. A new subcommittee charge to look at a survey of states and industries affected by Highly Pathogenic Avian Influenza (HPAI) looking at depopulation methods and procedures was initiated (see Post HPAI Survey by Julie Helm at the end of this committee report).
COMMITTEE ON SHEEP, GOATS AND CAMELIDS

Chair: Maggie Highland, WI
Co-Vice Chair: Rosie Busch, CA
Co-Vice Chair: Patrick Long, NE

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The Committee met on October 11, 2022, from 1:00-3:00 p.m. in Minneapolis, Minnesota. There were eight members, and 20 guests present virtually, and 33 members and 24 guests present in-person.

The meeting was called to order by Dr. Maggie Highland. Drs. Highland, Busch, and Long introduced themselves and brought the meeting to order. In-person attendees were asked to sign in and virtual attendees were informed that they were unable to participate in discussions or vote (view only format for virtual participants).

The report from the Subcommittee on Scrapie and Identification was presented by Dr. Keith Forbes, Vice Chair of the Subcommittee. The complete report for the Subcommittee on Scrapie and Identification was approved and is included at the end of this report.

Five presentations were delivered during the meeting, four in-person and one pre-recorded presentation. Each are summarized herein.

Presentations and Reports

National Animal Health Monitoring System (NAHMS) Goat 2019 and Sheep 2024 Updates
Katherine Marshall, USDA-APHIS

In 2019, the National Animal Health Monitoring System (NAHMS) conducted the second national study of goats in the U.S. The 24 participating States represented 80.4% of U.S. goats and 75.8% of U.S. goat farms with five or more goats. To ensure
management practices of dairy operations could be described, they were selected with a higher probability that would have occurred with simple random sample selection. Additionally, goat operations in California were oversampled as part of a collaboration with the California Department of Food and Agriculture (CDFA) to describe antimicrobial use practices on goat operations in California. Large operations (100+ goats) made up 22.3% of operations participating while medium (20-99 goats) and small (5-19 goats) represented 46.2% and 31.5% of operations respectively. Dairy operations made up 41.6% of operations while 36.5% of operations were meat goat. A total of 1,840 operations completed Phase I of the study resulting in a 60.0% response rate.

Study objectives were to describe:

- Describe changes in management practices from 2009 to 2019,
- Describe practices used to control internal parasites and reduce anthelmintic resistance,
- Describe antimicrobial stewardship and resistance,
- Describe management practices associated with economically important diseases,
- Provide a serologic and deoxyribonucleic acid (DNA) bank for future research.

On average, in 2019, producers had 15.5 years of experience raising goats compared to 11.7 years of experience in 2009. The increased years of experience held true across all operation sizes. Over 80% of operations, indicated they expected to have the same number of goats, or more, in five years. In 2019, a higher percentage of operations had used a veterinarian compared to 2009 (49.8% vs 34.8%). The primary reason for not using a veterinarian (82% of operations) indicated no veterinarian was needed. The FAMACHA card is a diagnostic test to help small ruminant owners identify animals that need anthelmintic treatment for *Haemonchus* by indicating the most anemic animals. Just 42% of goat operations reported having used the FAMACHA card in 2019. Fecal samples collected during the study were used to determine the prevalence of gastrointestinal parasites and examine anthelminthic resistance, and the prevalence of *Salmonella* spp., *Campylobacter* spp., *E. coli*, *Enterococcus*, *Cryptosporidium*, and *Giardia*. Blood from 6,029 goats on 654 operations were analyzed to examine the genetic variability of codons associated with increased resistance to scrapie. Resistant genotypes at codon 146 were present on 72.3% of operations, and had the highest percentage of buck with homozygous resistance, and therefore presents the greatest opportunity for building resistance in the U.S. goat population. Blood and vaginal swabs were collected to determine the prevalence of *Coxiella burnetii*. Sera from over 7,700 goats on 647 operations will be stored at NVSL for future research. Nasal swabs were collected to examine the prevalence of *Mycoplasma ovipneumoniae*. More results can be found at the NAHMS website: [www.aphis.usda.gov/aphis/ourfocus/animalhealth/monitoring-and-surveillance/nahms](http://www.aphis.usda.gov/aphis/ourfocus/animalhealth/monitoring-and-surveillance/nahms).

NAHMS intends to begin data collection for the fourth national sheep study in January 2024. The study objectives will include describing trends in sheep health and management from 1996-2024, describing antimicrobial stewardship practices and antimicrobial resistance in enteric microbes, estimating the prevalence of gastrointestinal parasites and resistance, and adding samples to the nationally representative serum bank for future research.

Results are available in a dashboard on the NAHMS website for the Sheep 2020 Death Loss study, the Goat 2021 death loss results will soon be available.

*Myco*plasma *ovipneumoniae*: Update on Alaska Regulations

*Robert Gerlach*, Alaska Department of Environmental Conservation

Dr. Gerlach provided an overview of Alaska’s experience with creating regulatory policy for a single pathogen, *Mycoplasma ovipneumoniae* which is one part of a complex disease
process, that is affecting domestic sheep and goat production/ownership in Alaska. Dr. Gerlach discussed the need for an ecosystem approach within the wildlife-domestic animal interface. Regulation currently in place are a futile attempt to establish a *M. ovipneumoniae* free state, as this bacterium, albeit differing genotypes, is also identified in multiple species of wildlife in Alaska. Additionally, discussed was the very low number of domestic sheep and goats that are in Alaska and how vastly different the dynamics of small ruminant agriculture are in Alaska as compared to the lower 48. Alaska has never had a respiratory disease die-off recorded in wild populations, yet five healthy domestic sheep flocks were culled due to this regulation. The trend in imports has decreased due to these regulatory policies.

**Transitioning to Electronic Identification (EID): Pathways and Obstacles for the U.S. Sheep and Goat Industries**

*Cindy Wolf, American Association of Small Ruminant Practitioners (AASRP)*

Dr. Wolf shared the findings of a two-year pilot project conducted by American Sheep Industry (ASI), with support from USDA, the Colorado Department of Agriculture, Merck Animal Health, and the Colorado Wool Growers Association, that evaluated the feasibility of implementing EID technology at a sheep market. This presentation was also given during the Subcommittee on Scrapie and Identification. Challenges identified from this pilot study included finding willing sale barn partners, physical set at the sale barn(s), identifying placement for the panel reader, compatibility of auction software with EID data, and availability of supply and quality labor.

**Learning points:**
- Conducting site visits to sale barns are imperative to understand their capabilities,
- Changing established behaviors proves difficult.

**Upcoming plans:**
- Visit established sale barns in Canada (Quebec) to learn more about systems that work,
- Develop theoretic model to educate the industry.

**American Sheep Industry (ASI) Perspective on the Future of the Cooperative Scrapie Eradication Program**

*Amy Hendrickson, American Sheep Industry Association*

Ms. Hendrickson discussed the sheep industry’s current perspective on the National Scrapie Eradication Program. This presentation was also given during the Subcommittee on Scrapie and Identification. Points made:

**ASI Concern: Program fatigue, especially with tagging. Why?**
- Majority of states have not had a scrapie case or traceback in sheep for more than seven years and some more than ten years.
- Diminished perception of value in the program
- Producers do not experience scrapie in their flocks or hear of it in their neighbor’s flock.
- Financial benefit from reduced number of diseased animals in flocks not enough rationale
- Producers tiring of required testing for breeding animals to move between states and some states are changing import requirements as a result.

**Unintended consequence of program changes**
- Action taken: Program reduction in readily available Scrapie ID tags
• Message: ID program isn’t that important anymore
  • Action taken: Importation of breeding sheep from Canada (a country not considered free of the Scrapie by World Organisation for Animal Health [OIE])
    o Message: being declared free by OIE is unnecessary.

THESE MESSAGES WERE NOT THE INTENTION BUT ARE HOW PRODUCERS SEEM TO BE INTERPRETING THE CHANGES

• What is the future of the National Scrapie Eradication Program (NSEP)?
  o Could the program be in jeopardy?
  o Is it time to re-imagine the NSEP to allow the sheep industry/states to be rewarded for hard work?
  o How to keep funding by focusing on the areas of most need?
  o What are those needs? Surveillance? Traceability? Education?

• Reward States and Industry
  o What is the risk of Scrapie in states with long history without cases/tracebacks? Can they be declared free?
  o USDA Recent Draft Definition of scrapie “free” state (negligible risk) available for comment
  o USDA’s willingness to consider industry concerns is appreciated
  o Still must strive for OIE recognition

• Discussions in the Industry
  o Should sheep and goats be treated separately within the Scrapie program?

Pros
  o Sheep industry participation for approximately 20 years. Expanded focus on goats really began with 2018 regulation.
    ▪ Perception: the sheep industry must “wait” for goat industry to catch up
  o Sheep and goats are not the same species and don’t manifest the disease in same manner.
  o In some populations of goats, the mandatory identification requirements have unique and complicated issues that make compliance difficult.
    ▪ Without good ID/traceability, the program won’t work

Cons
  o Scrapie can be found in both goats and sheep on the same premises.
  o Concern that support for scrapie eradication in goats, including the education component, will wane if sheep and goats are separated within the program.

Nanobodies: Therapeutic Advancements (Pre-recorded presentation)
Bonnie Lun, Fortis Life Sciences

Nanobodies have gained popularity as a promising tool for diagnostic and therapeutic development since its discovery from the serum of the Camelidae family. Nanobodies are derived from the variable domains (VHH domain) on heavy chain only antibodies and are the smallest known functional fragment of antibody containing antigen binding ability. They are superior to conventional antibodies due to their small molecular weight of 15kDa, enhanced stability, and higher binding capacity. This presentation provides an informational overview about the nanobody applications in human therapeutic development and how this technology can be translated into animal use for future applications. Join us to learn about how the Fortis|Abcore nanobodies discovery service can help you to advance the diagnostic and therapeutic research in the veterinary community.

Committee Business:
The business meeting was called to order. Due to time constraints, the committee
was able to only begin discussion on wording for a resolution, entitled, *Improve Access to Vaccines for Sheep and Goats in the United States*, which was first discussed during the 2021 Committee meeting, followed by a virtual meeting on October 3, 2022, in which there were 38 participants. In addition to comments and modifications made during the meeting, three attendees emailed suggestions that were followed up on, though this was not sufficient to bring the resolution to committee vote.

Past resolution review and mission statement will be reviewed for comments and decisions via virtual meetings beginning in January 2023. These meetings will also incorporate improvements on the developing vaccine resolution, headed by Dr. Rosie Busch. A vote was cast and approved for developing a Working Group to work on the wording of the vaccine resolution, in addition to identifying high priority vaccine candidates.
The Subcommittee met on October 9, 2022, in Minneapolis, Minnesota from 8:00-9:55 a.m. There were ten members, and two guests present virtually, and 29 members and guests present in-person. No previous resolutions needed to be reviewed and no new resolutions were brought to the committee at the meeting.

Presentations and Reports

American Sheep Industry (ASI) Perspective on the Future of the Cooperative Scrapie Eradication Program
Amy Hendrickson, American Sheep Industry

Ms. Hendrickson indicated that the scrapie program isn’t as front and center in most producer’s minds as we would like. Going forward, is the program going to focus on surveillance, traceability, or education? Discussion included the possibility of a seven-year rule which states without a scrapie case in the last seven years, could be rewarded with some form of scrapie-free state status.

National Scrapie Eradication Program Update
Diane Sutton, USDA-APHIS-VS

Over the last two decades, the National Scrapie Eradication Program (NSEP) has been very successful in reducing the prevalence of classical scrapie. Scrapie prevalence in the National Herd calculated using data from FY2017 through FY2021 has been reduced to <0.005% in sheep and <0.017% in goats. No positive animals have been identified since January 2021. In the last five fiscal years, there have been one positive sheep and two positive goats. The number of newly detected infected and source flocks peaked at 179 in FY2005. Forty-one states have not detected a case of classical scrapie in sheep in the last seven years and forty-seven states have not detected a case of scrapie in goats in seven years. These accomplishments have led the sheep and goat industries to ask the Animal Plant Health Inspection Service (APHIS), Veterinary Services (VS) to develop a definition of a scrapie free state. A draft definition has been developed and is being circulated for comment.

Despite the significant progress in eliminating scrapie, there is a high probability that classical cases still exist. In 2019, a goat was found to be positive at slaughter but could not be traced back to a herd of origin. The same was true for a black-faced sheep found positive at slaughter in 2021 that was traced back. The sheep was moved from another state without having official identification. These most recent untraceable cases illustrate the need for full compliance with the identification and recordkeeping regulations and for continued surveillance. It is essential that the sheep and goat industry, allied industry stakeholders (dealers, market, and slaughter plant personnel, etc.) and accredited veterinarians continue to be reminded of this message.

To attain international recognition of scrapie freedom per the World Organization
for Animal Health (WOAH), a country must demonstrate through an active surveillance program that no cases of scrapie have been detected in at least seven years. Surveillance needs to come from a variety of sources (e.g., farm, slaughter, etc.) and needs to be distributed across a country based on the population size of sheep and goats. The national scrapie surveillance goal for FY2023 is to collect at least 40,000 samples. The goal of collecting at least 40,000 samples has been in place for over a decade. Over the last years several factors including Covid and the highly pathogenic avian influenza (HPAI) outbreak have impacted the ability to meet this goal. The national target of at least 40,000 samples has not been met since FY2018. In FY2022, the total number of samples collected was about 21,000. Most states are meeting the minimum number of samples to retain their Consistent State status, however if every state met these minimum collection numbers, the total would only be 15,629. Rather than focusing just on meeting state minimums, surveillance needs to focus on meeting the national goal of at least 40,000. During FY2023 efforts will be made by APHIS-VS to work with State and industry partners to obtain more samples at slaughter, dealer feedlots, auctions, farms, veterinary diagnostic laboratories, and through veterinary referrals.

The low prevalence of scrapie requires additional surveillance efforts to detect the remaining cases such as increased targeted sampling which results in sampling subpopulations with a higher prevalence than the general population. VS conducted a formal expert elicitation to create a points system using an integrative group process to solicit input from seven experts with scrapie field experience. Taking into consideration the current scrapie status in the U.S. and practical considerations of running a scrapie surveillance program, VS developed a system to incentivize the submission of higher risk animals and animals from higher risk farms based on the expert elicited points system. Phase One of this system will be put in place in October 2023.

Delayed Incubation and Detection of Scrapie in G127S Goats

Dave Schneider, USDA, Agricultural Research Service (ARS)

Susceptibility of small ruminants to scrapie infection is influenced by genetic factors, most notably variations in the prion protein gene (PRNP) that result in certain amino acid substitutions in the prion protein (PrP). The prion research team at the Animal Disease Research Unit (ADRU) demonstrated goats bearing genetic variation in the PrP amino acid at position 222 (from Q to K, represented as Q222K) or at position 146 (N146S) were strongly resistant to developing infection after oral inoculation with classical scrapie. Tissues from the oldest surviving goats were checked for infectious prions by inoculating transgenic mice highly susceptible to scrapie prions (tg338 mice). Infectious prions were not detected in the tissues tested from goats heterozygous for this mutation (i.e., QK222). The two oldest NS126 goats were culled at the ages of 12 and 13 years of age without showing signs indicative of scrapie and without accumulation of the disease-associated misfolded prion protein (PrP-SC) in any tissue. Similar bioassay of these animals' tissues in tg338 mice is underway.

An oral inoculation study to determine the effects of the G127S mutation in goats has been completed. The results demonstrate strong exposure was achieved since all GG127 goats (the fully susceptible genotype) became positive for PrP-Sc in most regulatory lymphoid tissues by 18 months of age. In most GG127 goats, accumulation of PrP-Sc in the obex was present at 24 months of age and all goats were culled with signs of classical scrapie by 36 months of age. PrP-Sc accumulation was also observed in GS127 goats, but which was greatly delayed. Distribution of PrP-Sc in regulatory lymphoid tissues was greatly reduced until 36 months of age, and accumulation in the obex was not observed until 36 months of age. Clinical signs of scrapie were not observed in any of the GS127 goats before the 36-month endpoint of the study. Three SS127 goats born during the study were also inoculated, two of which were recently euthanized having developed
clinical signs of scrapie at four and four and a half years of age. PrP-Sc accumulation was readily observed in the lymphoid tissues and obex of these two animals. The third SS127 goat remains healthy. Thus, S127 PrP in goats can support infection but appears to mediate slower disease kinetics even in heterozygous animals (i.e., GS127 goats), and which resulted in delayed detection in regulatory tissues.

Research Update from the National Animal Disease Center (NADC) Agricultural Research Service (ARS)  
Justin Greenlee, USDA-ARS

The Virus and Prion Research Unit at the National Animal Disease Center has ongoing research projects with the agents of scrapie, bovine spongiform encephalopathy, and chronic wasting disease (CWD). A project plan outlining the experiments for our four permanent scientists for the next five years was recently approved. The scrapie experiments in the plan are in two main categories: investigating atypical scrapie and the potential for the classical scrapie agent from goats to transmit to other species.

The origin of bovine spongiform encephalopathy (BSE) in cattle is unknown, but it has been speculated that BSE came from the transmission of classical scrapie to cattle. Previous experiments conducted at the NADC and complimented by studies in the United Kingdom (UK) demonstrate that the lesions and molecular profile of PrPSc that result when the classical scrapie agent transmits to cattle are very different that BSE. However, recent studies demonstrate that when atypical scrapie prions are transmitted to mice expressing bovine prion protein the resulting PrPSc is indistinguishable from BSE. Therefore, we have initiated a study to investigate whether atypical scrapie prions will transmit to cattle and result in a BSE-like phenotype.

To investigate the transmission of classical scrapie prions from goats to other species we initiated studies in white-tailed deer and sheep. Whereas classical scrapie prions for sheep readily transmit to deer in an experimental setting, our recent work suggests that deer are not susceptible to classical scrapie prions from goats. Studies investigating the transmission of classical scrapie from goats to sheep are still underway, but early results suggest that transmission may be genotype dependent. Goat scrapie prions transmitted to 100% of ARQ/ARQ sheep exposed by the oronasal route. There was no evidence of PrPSc in VRQ/ARQ sheep tested after 70 months of incubation. Other genotypes of sheep are currently being studied.

Electronic Identification (EID) in a Sheep Auction Market – Implications for Utilization in Sheep Disease Traceability  
Cindy Wolf, American Association of Small Ruminant Practitioners (AASRP)

Dr. Wolf reported on a pilot project that involved EID use in sheep and goats moving through a livestock market. The project was carried out at a market in Colorado and was supported by industry and private companies with funding coming from USDA. The objective was to determine if capturing EID information could work at the speed of commerce. Challenges of the study included trying to adapt sale barns to work sheep and goats effectively (sheep wide single allies), trying to update software already present at the markets for capturing EID tags, educating market personnel on handling sheep and goats, and public health issues (COVID). Lessons learned included updating market software so as to capture both EID tags and weights at the same time, spending more time training market personnel on sheep and goat handling techniques because of employee turnover and lack of experience, and the need for modification of existing markets to handle sheep and goats.

Committee Business:

No recommendations or resolutions were brought for consideration to the committee.
COMMITTEE ON SWINE
Chair: Jeff Kaisand, IA
Vice Chair: Jamee Eggers, IA

Bobby Acord, NC; Gary Anderson, KS; Marianne Ash, IN; Rich Baca, CO; Andrew Bailey, DC; Maggie Baldwin, CO; David Baum, IA; Lisa Becton, IA; Joy Bennett, NY; Becky Brewer-Walker, OK; Steve Brier, MO; Nancy Brown, KS; Louise Calderwood, VA; Amanda Chipman, IA; Robert Cobb, GA; Dana Cole, CO; Maria Cooper, IN; Marie Culhane, MN; Susan Culp, TX; Bryan Deimeke, KS; Thomas DeLiberto, CO; Barbara Determan, IA; Kim Dodd, MI; Roger Dudley, NE; Tracy DuVernoy, MD; Sean Eastman, SC; Jamee Eggers, IA; Dee Ellis, TX; Joe Fisch, FL; Katie Flynn, KY; Anna Forseth, DC; Heather Fowler, IA; Kaylie Fritts, NE; Margaret Gabour, MA; Cyril Gay, MD; Michael Gilsdorf, MD; Stephen Goldsmith, DC; Alicia Gorczycy-Southerland, OK; Tracie Guy, FL; Patrick Halbur, IA; Rod Hall, OK; Steve Halstead, MI; Catherine Harris, NC; Nathan Harvey, NH; Karyn Havas, MN; Julie Helm, SC; Janemarie Hennebelle, GA; Heather Hirst, DE; Brian Hoefs, MN; Donald Hoenig, ME; Dennis Hughes, NE; Noah Hull, WY; Beth Johnson, KY; Ashley Johnson, IN; Jeffrey Kaisand, IA; Mary Kelpinski, MI; Darlene Konkle, WI; Berend Koops, KS; Angela Lackie, TX; T.R. Lansford, TX; Elizabeth Lautner, IA; Donald Lein, NY; Jane Lewis, CT; Christina Loiacono, IA; Gustavo Machado, NC; Bret Marsh, IN; David Marshall, NC; Michael Martin, SC; Chuck Massengill, MO; Dave McElhaney, PA; Thomas McKenna, MD; Sara McReynolds, KS; Miranda Medrano, MN; Gay Miller, IL; Richard Mock, NC; Jason Moniz, HI; Roxann Motroni, MD; Michael Neault, SC; Cheryl Nelson, KY; Dustin Oedekoven, SD; Elizabeth Parker, TX; Boyd Parr, SC; Bill Pittenger, MO; Amanda Price, UT; Dave Pyburn, IA; Suelee Robbe-Austerman, IA; Susan Rollo, TX; Steve Rommereim, SD; James Roth, IA; Mo Salmon, CO; Rachel Schambow, MN; Joni Scheftel, MN; David Schmitt, IA; Ryan Scholz, OR; Kristy Shaw, OH; Kyle Shipman, IN; Richard Sibbel, IA; Staci Slager, IL; Justin Smith, KS; Harry Snelson, IA; Gordon Sponk, MN; Darrel Styles, MD; Paul Sundberg, IA; Gregory Suskovic, MN; Dean Taylor, SD; Todd Tedrow, SD; Beth Thompson, SD; Liz Wagstrom, AZ; Dustin Weaver, GA; Patrick Webb, IA; Marcus Webster, GA; Kelli Werling, IN; Stephen White, WI; John Williams, MD; Noel Williams, DC; Nora Wineland, MI; Stephanie Wire, IL; Stephanie Wisdom, IA; Ryan Wolker, AZ; Melissa Yates, NC; Marty Zaluski, MT.

The Committee met on October 10, 2022, at 1:00 p.m. in Minneapolis, Minnesota. There were 38 attending virtually, and 64 members and guests were present in person. The meeting was called to order at 1:00 pm central time with introductions and review of the ground rules of the meeting. The vice chair shared the plan for regular virtual committee meetings going forward. Committee members are welcome to submit ideas for potential presentations on future virtual meetings to the chair and vice chair via email. The committee mission statement was reviewed.

Committee Business:

Under new business, the committee reviewed and discussed seven (7) resolutions regarding African Swine Fever (ASF) and one (1) resolution regarding Japanese Encephalitis Virus (JEV). The following resolutions were referred to the Committee on Resolutions and for consideration by the membership:

- Subject Matter: Request for USDA Animal and Plant Health Inspection Service (APHIS) Veterinary Services (VS) to define when Authorization of indemnity for depopulation will be approved by USDA APHIS VS during a foreign animal disease (FAD) outbreak that involves African Swine Fever (ASF).

- Subject Matter: Policy regarding restocking requirements and eligibility for indemnity of premises in a control area during an African Swine Fever (ASF) outbreak.
REPORT OF THE COMMITTEE

- Subject Matter: African Swine Fever (ASF) 72-Hour National Movement Standstill
- Subject Matter: African Swine Fever (ASF) Hour 73: Planning Options for Resumption of Movement following 72-hour National Movement Standstill
- Subject Matter: Mass depopulation response time of an infected premises with African Swine Fever (ASF)
- Subject Matter: Establish National Standardized Permitting Guidance for an African Swine Fever (ASF) outbreak prior to the outbreak.
- Subject Matter: USDA plan for a coordinated response to the first outbreak of Japanese Encephalitis Virus in pigs in the U.S.

Under old business, the committee reviewed and discussed resolutions from 2019. They voted on the following actions:

- **2019 Resolution #18 - Valid Sampling Methods and Protocols for Feed and Feed Inputs** – The committee acknowledges the response included, but recommends continued efforts by USAHA towards this resolution. No language was changed in the original resolution but requested the background be updated to include the information in the response.

- **2019 Resolution #19 - Efficient Diagnostic Sample Validation and Approval for Foreign Animal Diseases of Swine** - The committee acknowledges the response included, but recommends continued efforts by USAHA towards this resolution. No language was changed in the original resolution but requested the background be updated to include the information in the response.

- **2019 Resolution #20 - Foreign Animal Disease Prevention** – the committee feels the response was adequate and voted to move this resolution to inactive.

- **2019 Resolution #21 - Evaluating and Recognizing Compartments** – the committee feels the response was adequate and voted to move this resolution to inactive.

- **2019 Resolution #22 - Stop Movement – Criteria for Implementing and Releasing** - the committee feels the response was adequate and voted to move this resolution to inactive.

The Committee on Swine thanks the committee chair and vice chair, and the sub-group for their organization and work. With no further business to discuss, the meeting was adjourned at 2:55 p.m. central time.
COMMITTEE ON WILDLIFE
Chair: Peregrine Wolff, CA
Vice Chair: Mark Ruder, GA

Erika Alt, WV; Gary Anderson, KS; Paul Anderson, WI; Ethan Andress, ND; Charlie Bahnsen, ND; Kerry Barling, KY; Peter Belinsky, RI; Tom Bragg, NE; Beth Carlson, ND; Christine Casey, KY; Shelly Chavis, IN; Sarah Coburn, AK; Tim Condict, OK; Walter Cook, TX; Maria Cooper, IN; Susan Culp, TX; Donald Davis, TX; Thomas DeLiberto, CO; Barbara Determan, IA; Roger Dudley, NE; Dee Ellis, TX; Jessica Emerson, FL; James Evermann, WA; Heather Margaret Fenton, NT; John Fischer, GA; Katie Flynn, KY; Kaylie Fritts, NE; Tam Garland, TX; Robert Gerlach, AK; Samantha Gibbs, FL; Colin Gillin, OR; Linda Glaser, MN; Alicia Gorczyca-Southerland, OK; Michael Greenlee, WA; Rod Hall, OK; Nathan Harvey, NH; Tricia Hebdon, ID; Julie Helm, SC; Janemarie Hennebelle, GA; Terry Hensley, TX; Warren Hess, IL; Maggie Highland, WI; Robert Hilsenroth, FL; Clayton Hilton, TX; Donald Hoenig, ME; Donald Hoenig, ME; Dennis Hughes, NE; Noah Hull, WY; Carolyn Hurwitz, ME; Anne Justice-Allen, AZ; Jeffrey Kaisand, IA; Diane Kitchen, FL; Patrice Klein, DC; Laura Kleinschmidt, NE; Terry Klick, OH; Kavishi Karam, CA; Darlene Konkle, WI; T.R. Lansford, TX; R. Scott Larsen, CO; Rick Linscott, ME; Mitch Lockwood, TX; Jim Logan, WY; Linda Logan, TX; Karen Lopez, DE; Roxanne Lotts, WI; Aaron Loucks, NC; Travis Lowe, MN; Mark Luedtke, MN; Margie Lyness, GA; Jennifer Malmberg, WY; Bret Marsh, IN; Scott Marshall, RI; Chuck Massengill, MO; James Maxwell, WV; Patrick McDonough, NY; Andrea Mikolon, CA; Mendel Miller, SD; Lisa Murphy, PA; Alecia Naugle, MD; Michael Neault, SC; Cheryl Nelson, KY; Danielle Nelson, WA; Steve Olsen, IA; Gary Olsen, MN; Mitchell Palmer, IA; William Parker, GA; Bill Pittenger, MO; Jenny Powers, CO; Jennifer Ramsey, MT; Hunter Reed, TX; Sarah Reinkemeyer, MO; Suelee Robbe-Austerman, IA; Jonathan Roberts, LA; Susan Rollo, TX; Mark Ruder, GA; Sherri Russell, MO; Will Sander, IL; Shawn Schafer, OH; David Schneider, WA; Brant Schumaker, WY; Andy Schwartz, TX; Charly Seale, TX; Laurie Seale, WI; Kyle Shipman, IN; Daryl Simon, MN; Jonathan Sleeman, WI; Katie Steneroden, CO; Sandra Strilec, NJ; Steve Strubberg, MO; Diane Sutton, MD; Manoel Tamassia, NJ; Dean Taylor, UT; Tyler Thacker, IA; Beth Thompson, SD; Tracy Tomascik, TX; Michele Walsh, ME; James Watson, MS; Jennifer Weber, MO; Michelle Willette, MN; John Williams, MD; William Wilson, KS; Nora Wineland, MI; David Winters, TX; Richard Winters, Jr., TX; Cindy Wolf, MN; Peregrine Wolff, CA; Ryan Wolker, AZ; Melissa Yates, NC; Alan Young, SD; Marty Zaluski, MT.

The Committee met on October 11, 2022, in Minneapolis, Minnesota from 8:00-10:00 a.m. There were numerous participants present virtually, with 42 members and 36 guests present in-person. However, during the time-specific presentation, 90 participants were present in the room. Basic introductions were made at the beginning of the meeting and the mission of the Committee on Wildlife was presented.

Time Specific Paper

Highly Pathogenic H5 Influenza in North American Wild Birds: What's Next?  
David E. Stallknecht, Southeastern Cooperative Wildlife Disease Study, College of Veterinary Medicine, University of Georgia presented a time-specific paper on highly pathogenic H5 influenza in North American wild birds. The paper, in its entirety, is included at the end of this report.

Risk Assessment and Management of Highly Pathogenic Avian Influenza (HPAI) in U.S. Zoos  
Laura M. Kleinschmidt, Omaha's Henry Doorly Zoo and Aquarium
Highly pathogenic avian influenza (HPAI) is an unmistakable threat to bird populations cared for in U.S. zoos. Preparedness for potential outbreaks is an essential part of each zoo’s emergency action plans; each zoo should complete a risk assessment of their facility and is required to have a written plan reviewed regularly which details their plan to mitigate the identified risks. The goals of an HPAI emergency action plan are to protect human health by educating staff and the general public and preventing human infection, to protect animal health by reducing risk of exposure to HPAI/subsequent disease and avoiding depopulation of flocks on zoo grounds, and to protect business operations of these majority non-profit conservation organizations by maintaining public access and avoiding zoo closure. Zoo animal health leaders should monitor for potential threats as identified by the U.S. Department of Agriculture (USDA) and U.S. Geographical Survey (USGS). Maintaining collaborative relationships and open communication with regulatory agencies including the state veterinarian/state wildlife veterinarian, state animal epidemiologist, USDA Veterinary Services (VS) and associated district veterinarian(s), state department of agriculture, local public health agencies, and veterinary diagnostic laboratories will help a zoo sustain an up-to-date and effective HPAI emergency action plan and response.

Risk assessment is the first step in HPAI emergency preparedness; a zoo must first determine the location of the threat, what bird populations are susceptible on zoo grounds, and what the potential transmission points of disease are for their populations. HPAI emergency plans have a multilevel approach based on the location of the threat, escalating as the disease spreads first to within the continental U.S. and/or North America, then to within the zoo’s flyway or adjacent flyways, to within the state/adjacent state or within a designated mile radius of the zoo, and finally culminating with a plan should HPAI be detected in wildlife on zoo grounds or in zoo birds. Though all birds may be susceptible to HPAI, all bird species cared for on zoo grounds should be identified and prioritized based on their degree of susceptibility. Potential disease transmission points should be identified based on where and how birds are housed on zoo grounds, where carrier wild bird populations may congregate, what contact zoo birds may have with wild birds, their respiratory droplets, or their feces, what poultry or other avian products are fed to other birds and mammals at the zoo, and finally what potential fomite transmission points exist in regular zoo operations.

Risk management plans should have a stepwise multilevel approach determined by the risk assessment level, and the emergency response should constantly evolve as the threat evolves over time. Risk management plans should take into account all aspects of zoo operations. The risk to zoo birds is often first mitigated by moving susceptible populations to secure indoor holding spaces and/or quarantining public aviaries. Shipments of birds between zoos are also affected and may require additional testing or be stopped altogether to prevent the spread of disease. Animal care staff will be required to uphold stricter hygiene and biosecurity protocols to prevent transmission of disease. In addition to advocacy of these protocols, the veterinary team is an essential part of surveillance and treatment of potentially infected animals. All aspects of zoo operations should have changes instituted to decrease potential spread of disease, including on grounds maintenance and traffic, external vendors and contractors, and food supply for animals and/or guests. Ambassador animals and educational programming including behind-the-scenes tours will be affected and those services often temporarily discontinued depending on the threat. Zoos have an extensive reach and opportunity to champion education of the general public and media about HPAI risks and prevention in zoo and wild bird populations.

In summary, U.S. zoos have a moral and regulatory obligation to protect animal and human health from HPAI by maintaining an effective up-to-date plan for HPAI risk assessment and management at their facility. Continuous communication with regulatory
agencies and across all zoo departments is crucial to an effective emergency response and prevention plan. HPAI emergency action plans should take into account risk assessment, risk mitigation/management, and a multilevel adaptable approach to the ever-evolving HPAI threat.

Acknowledgements: The author would like to thank Dr. Gretchen Cole, DVM, DACZM, DECZM at the Oklahoma City Zoo and Dr. Richard Sim, DVM, DACZM at the Oregon Zoo for their contributions to the preparation of this presentation.

Tracking an Invader: Wildlife Surveillance for Haemaphysalis longicornis in the U.S. and Update on Theileria orientalis IKEDA

Michael Yabsley, Southeastern Cooperative Wildlife Disease Study (SCWDS), College of Veterinary Medicine, University of Georgia, and Warnell School of Forestry and Natural Resources, University of Georgia

In collaboration with the USDA-APHIS Veterinary Services (VS) and SCWDS member wildlife agencies, SCWDS conducts surveys for exotic arthropods across the United States and Caribbean region. Past and current programs include surveys for the tropical bont tick on wildlife; surveys for cattle fever ticks on wildlife in Texas; and surveys for *Haemaphysalis longicornis* and other exotic ticks on wildlife. Since the fall/winter of 2017, SCWDS has worked with numerous state, federal and private groups to conduct surveys of wildlife for *H. longicornis*. Methods have included 1) live animal trapping and environmental sampling in localized areas where *H. longicornis* has been documented, 2) passive regional surveillance of white-tailed deer and other wildlife, and 3) tick collections from wildlife presented to wildlife rehabilitation facilities in areas where *H. longicornis* has been documented.

After the initial detection in New Jersey in 2017, SCWDS conducted periodic trapping of wildlife in New Jersey in 2017 and 2018. Since spring 2019, SCWDS has conducted a study at a site in Albemarle County, Virginia to assess the importance of available hosts and habitats along with various microclimate variables on the presence and abundance of this tick. In that study, we determined that the seasonal variation of *H. longicornis* is consistent with previous studies where nymph life stages are persistent year-round but most active in the spring, followed by a peak in adult activity in the summer and larval activity in the fall seasons. We also observed a lower probability of detecting *H. longicornis* in field habitats. In addition, we detected *H. longicornis* on various wildlife hosts including coyote, eastern cottontail, racoon, Virginia opossum, white-tailed deer, woodchuck, and a *Peromyscus* sp. At the time, this was the first detection of this tick on a rodent host that is a reservoir for *Borrelia burgdorferi*. A similar study has recently been completed in Tennessee with comparable results and sporadic trapping of wildlife has occurred in North Georgia where we have found the tick was also active into late fall and on several wildlife species.

To date, from our passive regional surveillance and wildlife rehabilitation sampling program, we have examined >20,000 ticks from >2,000 individuals representing 53 species from 22 states resulting in numerous new state, county, and host records. Although the situation is dynamic, to date, we have detected *H. longicornis* in seven states (New Jersey, Maryland, West Virginia, Virginia, North Carolina, Kentucky, and Pennsylvania) on black bear, coyote, domestic dog, eastern cottontail, elk, gray fox, raccoon, red fox, Virginia opossum, white-tailed deer, woodchuck, a brown booby, great-horned owl, a Northern cardinal, and red-tailed hawk. In addition, numerous new county reports were generated for *Amblyomma americanum*, *Amblyomma maculatum*, *Dermacentor albipictus*, *Dermacentor variabilis*, and *Ixodes scapularis*. Thus far, our passive wildlife surveillance system for ticks has been an effective method for surveying a diversity of wildlife host species, allowing us to better collect data on current tick distributions relevant to human and animal health.
Since 2019, SCWDS has screened host-seeking *H. longicornis* and other native tick species from the index site of exotic *Theileria orientalis* Ikeda in Albemarle County, Virginia for selected pathogens. We detected exotic *T. orientalis* Ikeda genotype in *H. longicornis* implicating this tick as a vector for this parasite (vectoral capacity has since been shown by other researchers). Native ticks collected from this site were all negative for exotic *T. orientalis*, but we detect other related native protozoan parasites. In addition, we detected *Rickettsia felis*, a human pathogen, in one questing *H. longicornis*. To evaluate the potential of for white-tailed deer as potential reservoirs for exotic *T. orientalis* Ikeda, we tested 552 deer from throughout the Eastern United States, with a focus in sites where *T. orientalis* IKEDA had been reported in cattle. Although a high prevalence and diversity of *Theileria* and *Babesia* spp. were detected, none of the deer were positive for *T. orientalis*. Our data suggests that white-tailed deer are commonly infected with piroplasm species but not *T. orientalis*; however additional surveillance is warranted.

**Summary of USDA-APHIS, Veterinary Services (VS) RT-QuIC Sensitivity and Specificity Testing**

*Tracy Nichols*, USDA-APHIS-VS

Collaboration with USDA-ARS Pullman and Ames, USGS, University of Wisconsin, Madison, and University of Minnesota have determined the sensitivity and specificity of RT-QuIC in tonsil biopsy and postmortem medial retropharyngeal lymph nodes. A cross laboratory reproducibility study has been conducted and a data package is being prepared to submit to the USDA National Veterinary Services Laboratories (NVSL) for review. A blinded postmortem RT-QuIC sensitivity and specificity study has been completed on medial retropharyngeal lymph nodes and the bioassay portion will be starting soon.

**Chronic Wasting Disease (CWD) Alliance Update on CWD Information at an ARC GIS Secure International Data Management Hub**

*John Fischer* and *Matt Dunfee*, Wildlife Management Institute (WMI)

With funding from a series of Multi-State Conservation Grants, the CWD Alliance, WMI, Association of Fish and Wildlife Agencies (AFWA), and DJ Case & Associates teamed up with the Departments of Natural Resources of Indiana, Michigan, and West Virginia to determine the greatest non-fiscal needs of wildlife management agency regarding CWD. Needs were identified through national surveys, personal interviews, and a workshop with wildlife professionals.

The greatest needs were CWD-related information items on a state and province basis. Consequently, four online, interactive mapping tools were developed to help document, track, and manage CWD. The maps are hosted at the CWD Alliance website (CWD-INFO.ORG). All of the maps are driven by a central data source reviewed and managed by state and provincial wildlife professionals.

The four maps are:

- **CWD in North America** shows counties and wildlife management units in which CWD has been found in wild and/or captive cervids. It is available to everyone.

- **CWD-Related Hunting Regulations** provides CWD-related regulations from every state and province. The map shows regulations, maps of CWD-positive areas, and the CWD regulatory status of each state and province. It is available to everyone.

- **Carcass Transport Regulations** will help users learn the regulations impacting the transport of cervid carcasses from one state/province to another. It includes import, export, and pass-through regulations for cervid carcasses for every state and province. It is available to everyone.
Wildlife Agency Dashboard allows wildlife health and management professionals to research and compare CWD-related regulations or combinations of regulations across states/provinces. The map is available to wildlife health and management professionals only and can be found at: https://cwd-info-collaboration-cwda.hub.arcgis.com/pages/management. Editing and viewing-only access levels are available. If you would like access, contact Matt Dunfee mdunfee@wildlifemgt.org.

The maps are the first project and I encourage you to take a look at them. However, the capabilities of the hub are much broader, and we want to do more to assist you. We have heard about other problems that we know can be solved by the tools in the hub. We need you and your agencies to help us determine the biggest problems and the solutions to address CWD.

CWD Detection and Management: What Has Worked and Has Not?

In an effort to provide ongoing, authoritative, and defendable guidance on science-based CWD management for state and provincial wildlife management agencies, WMI, the CWD Alliance, and the Association of Fish and Wildlife Agencies (AFWA) partnered on a project titled “National Coordination and Technical Assistance for the Prevention, Surveillance, and Management of Chronic Wasting Disease (CWD)”. This project was funded by the AFWA Multistate Conservation Grant program and was administrated by WMI. One of the objectives of this project was to document examples of CWD detection and management approaches that have thus far proven to be successful as well those that have been implemented unsuccessfully.

Reports of CWD detection and management actions were collected, reviewed, and summarized from five states affected by CWD in free-ranging cervids as were peer-reviewed publications describing current management successes or lack thereof. All anecdotal reports and publications referenced in this document, or links to them, are provided in the appendix.

This review identifies management techniques that have effectively aided in early detection of CWD foci (and the agency response to them), reduced or stabilized CWD infection rates, or slowed the expansion of affected foci. These techniques are consistent with CWD management recommendations of the Association of Fish and Wildlife Agencies’ AFWA Best Management Practices for the Prevention, Surveillance, and Management of Chronic Wasting Disease and the Western Association of Fish and Wildlife Agencies’ Recommendations for Adaptive Chronic Wasting Disease Management in the West. The review also identifies management approaches that appear to have been unsuccessful.

Based upon the synthesis of the reports and publications included in this report, there appears to be general best practices that lead to greater success in managing CWD in wild cervids by state and provincial wildlife management agencies. These include, but are not limited to:

- Strong, cooperative, working relationships between state wildlife management and animal agriculture agencies that have or share regulatory authority over captive cervids.
- Rapid implementation of a previously prepared CWD response plan following the first CWD detection within a jurisdiction as well as subsequent detections in additional locations.
- Characterization of geographic distribution and CWD prevalence prior to determination of management approach(s).
• Designation of a CWD Management Zone with special restrictions and regulations under the authority of the state wildlife agency.

• A robust surveillance program capable of detecting CWD when prevalence is low, geographic distribution is limited, and the disease is more amenable to management.

• Effective public education programs that clearly state management goals while facilitating hunter and landowner support for, and compliance with, CWD-related actions, recommendations, regulations, and policies.

• A sustained and sustainable, long-term approach to CWD management, i.e., planning, funding, and implementing CWD management efforts for 10–20-year timelines.

• Harvest pressure and post-season culling that limit epidemic growth and are conducted over 10-20 year timelines.

In addition to the above successful management approaches, other factors were identified that appear to facilitate or contribute to the successes documented in the reports and publications:

• State wildlife agency authority over fenced, shooting facilities with mandatory testing of all animals that die within the enclosures.

• Mandatory participation in a state CWD Herd Certification program for intrastate movement of captive animals.

• Ability to compare and analyze data from several jurisdictions with differing harvest management practices over a long period of time (10-20 years).

• Aerial examination of newly detected areas to determine deer density and factors that confound CWD management such as artificial congregation of deer at baiting, feeding, mineral licks, or other sites.

• Availability of an agency CWD Response Team seven days a week to address concerns and interests of the public, landowners, and hunters.

• One-on-one agency staff interactions at CWD sampling stations to educate and inform hunters submitting animals for sampling.

• Quick turn-around on CWD test results (within three days after submission) to accommodate taxidermists and processors (and ensure their livelihoods) and hunters wishing to consume their venison.

• Participation and remuneration of taxidermists for collection of samples for CWD testing.

The following issues were identified as likely contributors to the apparent failure of some CWD management programs:

• Surveillance programs for first detection of CWD within a jurisdiction that were too short-lived, sampled too few animals, or did not adequately cover the geographic area needed to conclusively determine disease absence.

• Use of inappropriate statistical tables in the analysis of surveillance data that falsely support a conclusion that CWD is absent within an area.

• Implementation of CWD management responses that failed due to inadequate characterization of the prevalence and geographic extent of a newly detected CWD focus.

• Management efforts were inadequate in scope and scale, were too short-lived, or management effort assessments were made too soon to detect measurable impacts in the target population.
CWD Alliance Applied CWD Research Program – 6 current projects
Three projects were funded in 2019:
• Modeling Spatial Harvest Strategies for Chronic Wasting Disease Transmission – University of Alberta
• Prospective simulation assessments of alternative harvest strategies to mitigate and control CWD invasion and spread – University of Minnesota
• Accumulation of chronic wasting disease prions in plant tissues – University of Wisconsin

Three projects were funded in 2021:
• Population-level Impacts of Chronic Wasting Disease on Arkansas’s White-tailed Deer – AR Game and Fish Commission, University of Georgia, Southeastern Cooperative Wildlife Disease Study
• Punch in the Gut: Finding CWD Prions and Markers of Disease Risk in Fecal Samples – Cornell University

Funding for the 2021 projects included $222,239.60 from partners (Boone & Crockett Club, Rocky Mountain Elk Foundation, Mule Deer Foundation, and WMI), as well as $226,171 in matching funds from the recipient organizations. Thus, the total amount leveraged through our program for applied CWD research in 2021 was $448,410.60.

Next round of funding is being assembled. How can we do more to help you? Please contact John Fischer (jfischer@uga.edu) or Matt Dunfee (mdunfee@wildlifemgt.org) with your ideas for applied research to benefit your state/region.

Committee Business:
A resolution titled, Chronic Wasting Disease Carcass Disposal Dumpster Management and Biosecurity, was presented and discussed. A motion was made by Charly Seale and seconded by Travis Lowe. A brief discussion of dumpsters management practices by states followed. The motion passed unanimously 18-0.
III. Organizational Matters

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III. A. BYLAWS OF THE UNITED STATES
ANIMAL HEALTH ASSOCIATION

APPROVED 2020

ARTICLE I – NAME

The name of this Association shall be “The United States Animal Health Association.”

ARTICLE II – PURPOSE

The United States Animal Health Association is a forum for communication and coordination among state and federal governments, universities, industry, and other concerned groups for consideration of issues of animal health and disease control, animal welfare, food safety and public health. It is a clearinghouse for new information and methods, which may be incorporated into laws, regulations, policy, and programs. It develops solutions of animal health-related issues based on science, new information and methods, public policy, risk/benefit analysis and the ability to develop a consensus for changing laws, regulations, policies, and programs.

ARTICLE III – MEMBERS

3.1. Classes of Members. The classes of members are: Official Agency Members; Allied Organization Members; Individual Members; Student Members; Elected Regional Delegate Members; International Members; Life Members; and Honorary Members.

a. Official Agency Member. The animal health department or agency of each state, U. S. territory or commonwealth, and the District of Columbia; the animal health department of the United States of America; and such other governmental departments or agencies as the Board of Directors may, by a two-thirds majority vote, approve.

b. Allied Organization Member. Any national non-profit organization that is actively and directly concerned with and supportive of the interests and objectives of the Association as outlined in Article II may become a member upon approval of the Board of Directors by a two-thirds majority vote.

c. Individual Member. Any person engaged in work related to animal production, animal health, food safety, public health, veterinary medicine or animal research and who supports the interests and objectives of the Association as outlined in Article II may become a member upon approval of the Executive Committee by a majority vote.

d. Elected Regional Delegate Member. Such elected regional delegates as provided for in Article VI shall by virtue of such election automatically become members of the Association and shall serve from the close of the Annual Meeting following their election to the close of the following Annual Meeting and shall pay dues as the Board of Directors may determine.
e. **Student Member.** Any person enrolled in an AVMA-accredited or an AVMA-listed veterinary college or engaged in the formal study of a discipline outlined in Article II, and who supports the interests and objectives of the Association as outlined in Article II, is eligible to become a member of the Association. Student applicants may be asked to provide proof of student status, including a letter from the registrar or transcript. Student members shall not hold voting privileges as provided in 3.2.

f. **International Member.** The chief official agency member from any foreign federal animal health, food safety, public health or animal health research agency or department, and any foreign national animal industry organization or person who supports the interests and objectives of the Association as outlined in Article II, or said person's designee, is eligible to become a member of the Association upon approval of the Board of Directors by a two-thirds majority. International Members shall not hold voting privileges as provided in 3.2. However, the Association recognizes that Australia, Canada, Mexico and New Zealand are voting members and shall maintain that status unless membership or voting privileges are revoked by a two-thirds vote of the Board of Directors. Failure to pay dues results in an automatic loss of voting privileges. New International Members shall obtain voting rights only by amendment of the bylaws.

g. **Life Member.** Any Individual Member who has maintained membership in the Association for 35 years, or if such member is at the point of retirement, for 25 years, is eligible to be a Life Member. Past-Presidents of the Association are deemed to be Life Members. Life Members shall have all the privileges of regular membership and shall be exempted from payment of all Individual Member dues. Election to Life Membership of Individual Members shall be by a majority vote of the Board of Directors. Life Members shall be exempt from the payment of one-half of Annual Meeting registration fees; provided that retired past-presidents who receive no remuneration for expenses incurred while in attendance are fully exempt from the payment of Annual Meeting registration fees.

h. **Honorary Member.** Any person not otherwise a member of the Association who has contributed materially to the advancement of animal science, food safety, public health, veterinary medicine, animal research, or the purposes of the Association, may be nominated by the Executive Committee for Honorary Membership. Honorary Membership shall be conferred by a majority vote of the Board of Directors. Honorary Members shall be exempt from the payment of all dues and shall not have voting privileges as provided in 3.2.

3.2. **Voting.** Each member shall have one vote, unless otherwise provided in these bylaws.

a. **By State and Federal Official Agency Members and Allied Organization Members.** The director or chief executive officer of each Official Agency Member and Allied Organization Member shall appoint and certify in writing to the Executive Director of the Association a person to represent, vote, and act for each of these member classifications in all the affairs of the USAHA, until further notification.

3.3. **Dues.** The Board of Directors at any Annual Meeting shall have the power to determine the amount of dues.

a. **Non-payment of Dues.** Subject to any policy the Board of Directors may establish for reinstatement, failure to pay dues within 90 days of notice of delinquency may result in automatic termination of membership.
b. Voluntary Withdrawal of Membership. A member may voluntarily terminate membership effective upon submission of written notice of withdrawal to the Association but shall not be entitled to a refund of any dues paid.

3.4. Effective Date of Membership. Membership shall become effective upon submission of written application in the form required, satisfaction of eligibility requirements, election to membership by an appropriate vote as described in Article III, and payment of annual dues.

3.5. Suspension or Expulsion. Any member may be suspended or terminated for cause, and upon reasonable notice. Sufficient cause for such suspension or termination of membership shall be violation of these bylaws or any lawful rule or practice duly adopted by this Association, or any other conduct prejudicial to its interests. Suspension or expulsion shall be by two-thirds vote of the entire membership of the Board of Directors.

ARTICLE IV – MEETINGS

4.1. Annual. There shall be an Annual Meeting between September 15 and November 15 for receiving annual reports and the transaction of official business of the Association.

a. Notice Requirements. Written notice setting forth the agenda and location of the Annual Meeting shall be made publicly available or noticed electronically to all members at least 60 days prior to the first day of the meeting.

b. Annual Meeting Location. The location of the Annual Meeting shall be selected by the regional districts on the following rotational basis: North Central, Northeast, Western, and Southern; and with the concurrence of the state animal health official of the state in which the meeting is to be held. The location and site shall be finally selected in accordance with guidelines proposed by the Executive Director and approved by the Executive Committee. The Board of Directors shall be advised of the selected meeting location at least three years in advance of the meeting. If any Annual Meeting location becomes unavailable and/or unacceptable the Executive Committee is authorized to select an alternate location.

c. Closure. The Annual Meeting shall be considered officially closed upon the completion of the Board of Directors’ meeting held on the last day.

4.2. Special Meetings. Special meetings may be called by the President, in consultation with the Executive Committee, or by a majority of the Board of Directors. The membership shall be electronically notified of any special meeting at least 30 days in advance. Notification shall include the time, location and subject(s) to be considered. Emergency meetings shall be noticed by the Executive Director with the approval of the Executive Committee with as much notice to the Board of Directors as may be practical under the circumstances.

4.3. Committee and General Membership Meetings. Unless otherwise specifically set forth in these bylaws, all committee and general membership actions require a majority vote provided a quorum of the voting membership is present.

4.4. Quorum. A quorum of the Executive Committee shall consist of two-thirds of its membership. A quorum of the Board of Directors shall consist of thirty (30) or more members, providing that Official Agency Members comprise a majority of those in
attendance. A quorum of all other committees shall be ten (10) voting members or thirty percent (30%) of the committee membership, whichever is less. A quorum of the general membership shall consist of thirty (30) or more members.

4.5. Proxy Voting. Proxy voting (the power of attorney given by one person to another to vote in his or her stead) is not permitted in any meeting.

ARTICLE V – OFFICERS AND EMPLOYEES

5.1. Elected Officers. The elected officers of the Association are: President; President-Elect; First Vice-President; Second Vice-President; Third Vice-President; and Treasurer. They shall be voting members in good standing of the Association.

a. President. The President is the chief officer of the Association and shall preside at the Annual Meeting and all meetings of the Executive Committee and perform other duties as customarily belong to that office or which the Board of Directors or Executive Committee may assign. The President is an ex-officio member of all committees and may designate a qualified member to attend committee meetings in his or her place.

b. President-Elect. The President-Elect shall act in place of the President in the event of his/her absence, death, or inability to act. When so acting, the President-Elect shall have all the powers of and be subject to all restrictions upon the President. The President-Elect shall chair all meetings of the Board of Directors. The President-Elect shall perform other duties as the President, Board of Directors or Executive Committee may assign. The President-Elect shall automatically become President upon election at the close of the Annual Meeting.

c. First Vice-President. The First Vice-President shall act in place of the President-Elect in the event of his/her absence, death or inability to act and shall perform other duties as the President, Board of Directors or Executive Committee may assign.

d. Second Vice-President. The Second Vice-President shall act in place of the First Vice-President in the event of his/her absence, death or inability to act and shall perform other duties as the President, Board of Directors or Executive Committee may assign.

e. Third Vice-President. The Third Vice-President shall act in place of the Second Vice-President in the event of his/her absence, death, or inability to act and shall perform duties as the President, Board of Directors or Executive Committee may assign.

f. Treasurer. The Treasurer shall be the chief financial officer of the Association, shall be chairperson of the Audit Committee and shall perform those duties that are delegated to the office by the Board of Directors and the Executive Committee. The Treasurer shall not be responsible for the day-to-day financial transactions of the Association, which will be assumed by the Executive Director.

g. Election.

1) The Committee on Nominations and Resolutions shall annually report its recommendations for the offices of President, President-Elect, First Vice-President, Second Vice-President, Third Vice-President, Treasurer and Regional
Delegates to the Association membership at the first business session of the Annual Meeting and again during the second business session at a time certain specified in the program for “Report of Action of the Committee on Nominations and Resolutions.” The report shall be read at a time that minimizes conflict with other proceedings, with adjustments as needed at the President’s discretion.

2) The District from which the President originated shall submit a nominee for the office of Third Vice-President.

3) Should vacancy(ies) coincide with the Annual Meeting, the District(s) from which the officer(s) vacated shall submit a nominee for the office of Second Vice-President (if two vacancies occur a First Vice-President will also need to be nominated).

4) Nominees for Regional Delegates from the Districts shall be selected by the individual districts and supplied in a timely fashion to the Committee on Nominations and Resolutions for inclusion in its report.

5) The report or amendments approved by a majority vote of the membership is forwarded to the Board of Directors. The acceptance of the report by a majority vote of the Board of Directors shall constitute election of the nominees to office.

h. Resignation. An elected officer may resign his or her position before term maturation by submitting notice in writing to the Executive Director of the Association.

i. Succession.

1) If vacancy(ies) occur between Annual Meetings, the District(s) from which the officer(s) vacated shall submit nominee(s) in writing and within a reasonable time frame to the Executive Director for those office(s).

2) At the discretion of the Executive Committee, the nominee(s) may serve as interim-elected officer(s) until the next Annual Meeting. While serving in an interim capacity, the nominee(s) may fulfill all responsibilities, including voting, and complete all tasks normally associated with the office(s) or which the Board of Directors or Executive Committee may assign.

3) The interim-elected officer(s) may fulfill the District’s nomination to be elected as described in section 5.1.g of this Article during the Annual Meeting that immediately follows the vacancy announcement(s).

j. Term. The officers shall serve for one year or until their successors are elected and qualify. The Treasurer may serve for up to six years. The Treasurer’s term may be extended by the Committee on Nominations.

5.2. Executive Director. The Executive Director shall be employed by and serve at the pleasure of the Executive Committee, manage the Association’s day-to-day affairs and perform other duties as customarily belong to that office or as the Board of Directors or Executive Committee may assign. The Executive Committee shall prepare and negotiate a contract with the Executive Director for a period of not more than five (5) years which shall be subject to approval by a majority of the Board of Directors. If the Association does not have an Executive Director, the Board of Directors shall elect a Secretary.
ARTICLE VI – BOARD OF DIRECTORS

6.1. Board of Directors. The Board of Directors shall have authority over all matters of the Association within the limits of the bylaws.

6.2. Composition. The Board of Directors shall be composed of the following:

a. The Official Agency Members or their designees
b. One representative selected by each of the Allied Organization Members
c. Two delegates-at-large from each of the four regional districts
d. Past-Presidents of the Association
e. The International Member who is the chief animal health executive officer representing the principal federal animal health departments of Canada, Mexico, Australia and New Zealand, or said person’s designee.
f. Members of the Executive Committee

6.3. Meetings. The Board of Directors shall have a regular meeting at the time and place of the Annual Meeting, and shall meet at such other times and places selected by the President or by request of a majority of the directors, in which latter event, the President shall promptly set the time and place of the meeting. Notice of all meetings of the Board of Directors shall be made publicly available and/or transmitted electronically to the membership at least thirty days in advance of such meetings. The President, on such reasonable notice as may be practicable under the circumstances, may call emergency meetings of the Board of Directors. At any meeting of the Board of Directors, the President-Elect (Chairman of the Board of Directors), with a majority vote of the Board of Directors, may call for an Executive Session limiting attendance.

6.4. Duties. The Board of Directors shall receive all committee reports and accept or reject all or part of them; review and approve or disapprove with comment the actions of the Executive Committee; and perform other functions set forth in the bylaws of the Association.

ARTICLE VII – EXECUTIVE COMMITTEE

7.1. Executive Committee. The Association shall have an Executive Committee composed of the elected officers and the immediate Past-President of the Association. The Executive Director shall serve as an ex officio, non-voting member of the Executive Committee and shall not be counted for the purpose of determining a quorum.

7.2. Duties. The Executive Committee shall manage the financial, administrative and internal affairs of the Association when the Board of Directors is not in session. To exercise the authority of the Board of Directors, the Executive Committee must act as a whole and must submit its action for approval at the next meeting of the Board of Directors.

7.3. Meetings. The Executive Committee shall meet at least four times each fiscal year at time(s) and place(s) determined by the President. The Executive Committee is authorized to take action upon the concurring votes of a majority of its total membership, provided that a quorum is present.

7.4. Emergency Meetings. Should the President determine that an emergency situation exists, he or she may convene a telephone or other type of electronic conference meeting of the Executive Committee, which may then act provided a quorum participates. The Executive Committee may also conduct voting electronically if circumstances require and convening is not reasonable.
ARTICLE VIII – ORGANIZATIONAL DISTRICTS

8.1. Districts. The Association is composed of five districts including the Northeast Regional District, the North Central Regional District, the Southern Regional District, the Western Regional District and the District-At-Large.


b. The North Central Regional District consists of Association members of the states of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

c. The Southern Regional District consists of Association members of the states of Alabama, Arkansas, Georgia, Florida, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and the Virgin Islands and Puerto Rico.

d. The Western Regional District consists of Association members of the states of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

e. The District-At-Large comprises the Allied Organization Members, Elected Regional Delegate Members and Past-Presidents of the Association.

ARTICLE IX – STANDING AND SPECIAL COMMITTEES

9.1. General. The President shall annually appoint from the members of the Association standing or special committees or subcommittees and their chairpersons as required by the bylaws or as he or she finds necessary. Each committee shall meet during the Annual Meeting and at other times deemed necessary by the President of the Association and committee chairperson to accomplish the work of the committee. Only members of the Association permitted by these bylaws are permitted to vote on the work of the committee.

9.2. Program Committee. A Program Committee comprising the chairpersons of all standing committees and subcommittees and the elected officers of the Association shall be appointed by the President to develop the programs for the annual and any special meetings of the Association with the goal of furthering the purposes of the Association. The Program Committee shall be chaired by the President-Elect and co-chaired by the First Vice-President.

9.3. Committee on Nominations and Resolutions. The Committee on Nominations and Resolutions comprises the past-presidents of the Association, the presidents of the Northeast, North Central, Southern and Western Regional Districts, and the president of the District-At-Large.

a. Chairperson. The immediate Past-President of the Association shall chair this committee.

b. Nomination of Elected Officers. This Committee shall receive, consider and recommend to the Association’s membership at the Annual Meeting nominations for the elected officers specified in 5.1 and delegates from each district as specified in 6.2.c. The recommendation of elected officers and delegates from
each district shall be submitted at least one month prior to the first membership meeting convened at the Annual Meeting.

c. Resolutions. This committee shall review all resolutions of the standing and special committees (the Executive Committee and Board of Directors are standing Committees) for ambiguities and redundancy but shall not alter their intent. After this review, this committee shall present the resolutions to the general membership for approval, which shall require a majority vote.

9.4. Audit Committee. The Audit Committee shall receive the annual audit report and confirm that all financial affairs of the Association are in order and make recommendations to the Board of Directors necessary to ensure the proper management of the finances of the Association.

9.5. Special Committees. The President with the advice of the Executive Committee shall appoint the chairperson(s) and members of such other committees as are necessary to accomplish the purposes of the Association.

ARTICLE X – MISCELLANEOUS

10.1. Amendments.

a. Proposed amendment(s) to these bylaws may be submitted in writing to the Executive Committee by Association members in good standing. The Executive Committee shall provide its recommendations on the proposed amendment(s) to the Board of Directors for deliberation and action. If approved by majority vote of the Board of Directors, the proposed amendment(s) shall be communicated to the general membership by electronic transmission and by posting on the Association website. The proposed amendment(s) shall then be presented to the Association membership at the next Annual Meeting.

b. Amendments to bylaws shall be presented section-by-section at a meeting of the members and shall be approved only upon an affirmative vote of two-thirds of the voting members, provided a quorum is present.

c. In the event the proposed amendment(s) are not approved by the Board of Directors as set forth in 10.1.a, they may be considered by the general membership as described in 10.1.a as prompted by a petition signed by at least thirty members.

10.2. Fiscal Year. The Executive Committee shall establish the Association’s fiscal year.

10.3. Parliamentary Procedure. All questions of order not specially provided for in applicable federal or state statute or rule, or Association articles of incorporation, bylaws or policies shall be decided by the usual parliamentary rules, Roberts’ Rules of Order Newly Revised being taken as the guide and standard.

10.4. Confidential Information. Information of the Association, including personal information of members, shall be maintained in confidence and not used for any other than Association purposes nor disclosed to others, except as permitted or required by law, these bylaws or written consent of the Association, by Association members, directors, officers, employees and agents.
10.5. **Liability of Officers and Directors.** The officers and directors of the Association shall not be personally liable for the debts or actions of the Association.

10.6. **Annual Audit.** The Association shall cause an independent certified public accountant, selected by the Executive Committee, to make an annual examination of its financial accounts and shall submit the report of examination to Audit Committee.

10.7. **Compensation/Reimbursement.** No member of the Board of Directors, committee member or elected officer of the Association shall receive any compensation for his or her services as such. The Association shall develop policies providing for reimbursement of expenses reasonably incurred in attending meetings and performing special assignments of the Association by the elected officers.

10.8. **Dissolution.** In the event of dissolution, the Association shall distribute its assets as required by the laws and statutes of the State of Delaware; and distribute its remaining net assets in a manner permitted an entity to maintain its status as exempt from taxation under Section 501 (c) (5) of the Internal Revenue Code of 1986, as amended, or any successor provision.

10.9. **Electronic Communication.** Any action to be taken or notice delivered under these bylaws may be taken or transmitted by electronic mail or other electronic means, and any action or approval required to be written or in writing may be transmitted or received by electronic mail or other electronic means.
III. B. USAHA ADMINISTRATIVE POLICIES

ESTABLISHMENT AND OPERATION OF STANDING COMMITTEES

2012

1. All members of standing committees must be official members of USAHA in good standing in accordance with Section 3.4 of the bylaws.

2. The Chair, Vice Chair, and all members of USAHA Committees shall be appointed by the President. It is expected that member appointments will be made in consultation with Committee Chair.

3. Efforts should be made to keep committee size to a manageable number of members, and to maintain a geographical balance, as well as an appropriate balance of State, federal, industry and technical members.

4. Committee Chairs shall be appointed for term of not more than five years, and should not be reappointed Chair for at least one year.

5. All USAHA members present at committee meetings may enter into discussions. Only committee members may introduce resolutions or vote on items of business.

6. Committees shall submit reports only to the Board of Directors and Resolutions only to the Committee on Nominations and Resolution. Committee reports are not considered official actions until approved by the Board of Directors. Committee resolutions are not considered official actions of USAHA until approved by the general membership.

7. Committee Chairs may appoint subcommittees as necessary. Subcommittee members must be members of the parent committee. Subcommittees shall deliberate only the subject matter(s) delegated to them by the parent committee and shall report only to the parent committee.

8. Committee rosters for the current year should be finalized no later than 30 days prior to the start of the Annual Meeting.

COMMITTEE LEADERSHIP CONFLICT OF INTEREST

2018

Individuals interested in, nominated for or currently serving in committee leadership positions (Chair, Vice Chair, Subcommittees, Working Groups) will disclose any possible conflict of interest prior to appointment, or during service whereas a change in circumstance presents a possible conflict. A conflict of interest exists if there is any matter of jurisdiction for the committee’s purpose that the individual knows would inure to his or her special private gain or loss. Special private gain or loss’ means an economic benefit or harm that would inure to the individual, his or her relative, business associate, employer, or principal, unless the measure affects a class that includes the officer, his or her relative, business associate, or principal."

If a conflict is present, the individual shall not be appointed to such a position under given circumstances, and similarly if a conflict arises during a term of service, the individual will be relieved of the leadership position. Further, if the individual fails to disclose with the intent of special private gain or loss, the Executive Committee will review and determine necessary recourse.
PARTICIPATION IN USAHA OF FEDERAL AGENCIES AND FEDERAL EMPLOYEES

2009

Federal agencies and personnel have long been an integral and valuable part of USAHA. Agencies have taken part in the organization through official membership and representation on the Board of Directors. This provides the opportunity for presenting agency positions and concerns to the Association. Individual membership and participation of numerous animal health, food safety, and research professionals from a variety of federal agencies is critical to the committees’ success.

A major function of USAHA is development of policies and procedures of national disease control and eradication programs. This means that many committee findings and resolutions constitute recommendations to the appropriate federal agency which is responsible for the area of concern. Some of these recommendations are contrary to agency policy or position. For this reason, federal employees should actively share their expertise and opinions as committee members, but should not serve as chairs where they would be making recommendations to their employer.

A number of committees have used federal employees as assistant chairs to good advantage. Also, committees which do not deal with federal agency policy may be chaired by federally-employed USAHA members where appropriate.

The Executive Committee is responsible for the daily activities of the Association, and represents the Association on a year-round basis. To avoid conflict of interest, federal employees should not serve in elected officer positions of the Association. Individuals that serve as an officer that become employed by the federal government should resign their officer position, and a replacement should be sought in accordance with the bylaws.

FINANCIAL AND INVESTMENT POLICY

Rev. 2017

The following policy outlines the administrative principles of the United States Animal Health Association reserve funds.

Goals

1. Build and maintain two year’s operation expenses in reserves.
2. Maintain adequate liquidity in the instance funds must be called for use.
3. Earn reasonable interest on reserves to maintain principle and exceed economic inflation rates.

Delegation of Authority

Both Treasurer and Executive Director should be designated as signors on any USAHA accounts.

Responsibilities

• Treasurer: Primary authority for investment decisions, acting within parameters of investment policy. Responsible for monthly review of financial s and chairing audit committee.
III. ORGANIZATIONAL MATTERS

- Executive Director: Manager of investments, to act under direction of Treasurer. Provide research, recommendations to Treasurer for decisions. Responsibility for day-to-day bookkeeping and reporting (to Treasurer/Executive Committee) of financial information. Compile and distribute quarterly investment reports to EC.

- Executive Committee: Provide regular review of investments from quarterly reports. Provide oversight of Treasurer and Executive Director decisions.

- Board of Directors: Provide approval and/or amendments to investment policy for execution.

Investment Constraints

At all times the account will have a minimum of $900,000 in marketable CD’s. Investments that require Committee approval before being placed in the portfolio include individual derivatives, such as options and futures, collectibles, currencies, tangible real estate, mineral exploration and non-covered options, unless part of a commingled fund. No securities shall be purchased on margin. Additional guidelines are as follows:

Equity

- **Single security concentrations**: No single security (excluding pooled funds) shall represent more than 10% of the equity portfolio unless approved by the Committee.

- **Liquidity**: No stock security shall exceed 5% of the outstanding voting shares of a company. Investments in illiquid private equity must be approved by the Committee.

Fixed Income

- **Quality**: Unless specifically designated for a high-yield portfolio, the average weighted credit rating of individual bonds shall be no lower than “A” (or comparable rating) as measured by Moody’s, Standard & Poor’s. High-yield securities are permissible as long as overall quality standards are maintained.

- **Duration**: Unless approved otherwise by the Committee, duration of individual CD’s shall be no longer than 36 months with a maximum of $50,000 in each CD.

- **Issuer Concentration**: No issuer (except for the U.S. government) shall exceed 10% of the fixed income portfolio. At all times the account will have at a minimum of $900,000 in marketable CD’s.

Alternative Investments

- **Concentrations**: Aggregated hedge funds should be diversified, whether by asset class, strategy, manager, geography, sector, or other factors. Likewise, aggregated real estate investments should represent a broad array of properties or securities. Commodities in aggregate should represent a broad basket of commodities.

- **Liquidity**: Investments with liquidity and pricing that are less frequent than daily shall be approved by the Committee. Investments involving private placements shall be approved by the Committee.
III. B. USAHA ADMINISTRATIVE POLICIES

YEAR-ROUND ACTIVITIES

2008

USAHA is a year-round organization, and is often asked to comment on specific issues related to its mission. USAHA should first refer to its resolutions to address a given issue. USAHA staff will act upon all resolutions as directed by the membership and Board of Directors, involving necessary correspondence. For issues that arise, that pertain to resolutions, can have direct action taken as deemed necessary. No additional voting is necessary, though the input of the executive committee is encouraged.

Should an issue be presented that no resolution has been approved, the Executive Director/Secretary will coordinate with President and First Vice President (Chair of Government Relations) to determine if USAHA should address the specific issue, with consensus from the Executive Committee.

SPECIAL FUNDS POLICY

2009

USAHA will manage special funds for Committees and closely related organizations to house finances and bookkeeping services. Special funds will be held separate of the general USAHA fund, and USAHA will record transactions accordingly. USAHA will enter into a written agreement for each account with the primary representative of the group or Committee and a designated treasurer for that account. The designated account treasurer holds authority for all transactions. Special fund oversight is held by the USAHA Treasurer with support of the Secretary/Executive Director.

JOB POSTINGS FOR NEWS ALERTS AND WEB SITE

2010

USAHA has available opportunities for distributing position announcements through its daily News Alert Summaries, currently on a weekly basis. The following policy sets forth guidelines for use of this service.

USAHA Job Postings are available to any member of the association at no fee. The association will post positions to its web site in addition to the distribution among members. Non-member groups may also submit positions, however, are subject to review and approval for distribution. The following criteria will be considered:

1) Animal health or animal agriculture related
2) Fields of veterinary medicine, research, diagnostics, regulatory, technical services, non-profit, and/or other related supporting disciplines
3) Align with the mission of USAHA

USAHA reserves the right to refuse posting of any position.
OFFICIAL AGENCY, ALLIED ORGANIZATION MEMBER SUBSTITUTIONS

2011

Official Agency and Allied Organization Members have a designated representative to serve on the board of directors and receive the member benefits for that organization. Occasionally, the designated representative is unable to attend all or some of the annual meeting. In these instances, the representative can designate a substitution to fulfill their obligations on behalf of their agency/organization. This includes:

- Board of Directors Meetings
- Membership Meetings
- Committee Meetings (of which the original representative is an appointed member)

While the USAHA Bylaws state that proxy voting is not allowed, the substitution is treated differently as a transfer of the representative duties.

STUDENT MEMBERSHIP POLICY

2012

Students must be a full-time student in an accredited college or university, in a field of study outlined in the bylaws, part 3.1, E in order to be eligible as a student member and to receive student meeting registration rates.

TREASURER LIFE MEMBERSHIP

2016

The organization’s Treasurer shall become eligible for Life Membership upon completion of at least a six-year term in the office. This aligns with other executive committee officers’ commitment through the chain of officers. Organizational dues, however, are not waived if the individual continues to represent an official agency or allied organization member, as is true with any past president.
III. B. USAHA ADMINISTRATIVE POLICIES

POLICIES REGARDING USAHA ANNUAL MEETING

ANNUAL MEETING SPEAKER REGISTRATION/COMPLIMENTARY REGISTRATION

Revised 2011

USAHA will not provide complimentary registration to any member or regular attendee of USAHA annual meetings that is speaking on a committee agenda.

USAHA will provide a complimentary registration to non-member, invited speakers by request for committees for the purpose of presenting to a committee or general session. Requests must be submitted to the USAHA office.

USAHA will consider providing for travel expenses for general session and committee speakers on a limited basis. Requests must be submitted to the Executive Committee in advance, with consideration being given to a proposed speaker’s expertise, timeliness of subject matter, likelihood of attending the meeting otherwise, and budgetary capabilities.

VIDEO & AUDIO RECORDING OF COMMITTEE PROCEEDINGS

2008

USAHA prohibits third-party video and audio recording of committee meetings at the Annual Meeting.

THIRD PARTY MEETINGS

2008

USAHA will permit related organizations, with missions consistent with those of USAHA, to partner in its Annual Meeting to provide a venue for their gatherings. Agreements are arranged on a case-by-case basis, with input from the Program Chair and approval by the Executive Committee. In general, these organizations are expected to cover related expenses to USAHA for their event. Attendees are also expected to pay registration fees for the Annual Meeting.

AAVLD PARTNERSHIP

2008

USAHA will maintain a Memorandum of Understanding with AAVLD regarding all issues surrounding the Annual Meeting execution. The MOU will serve as a basis for coordination between the two organizations, and be reviewed annually.

ANNUAL MEETING HOST STATE BENEFITS POLICY

2010

As the State hosting the Annual Meeting is often requested to provide support to the organization in terms of staff, supplies and time commitments, USAHA will provide reciprocal in-kind benefits to the hosting State to help offset those costs. USAHA will provide one complimentary registration for every three (3) paid registrations for host state employees. The state animal health official is responsible for communicating the complimentary registration designees to USAHA by the pre-registration deadline. Exceptions to this guideline are subject to review and approval by the Executive Committee.
REIMBURSEMENT AND EXPENSES
2008

In accordance with the Bylaws, Section 10.7, USAHA may provide reimbursement or stipend to its officers, board of directors or committee leadership for reasonable expenses incurred while performing specific assignments of the Association. Requests must be submitted to the Executive Committee for approval in advance of the assignment. The Executive Committee will remain judicious in granting requests and mindful of budgetary limitations when considering requests.

USAHA will reimburse staff for all reasonable expenses incurred while performing duties of the Association. Each individual will furnish full documentation of expenses for audit purposes, subject to review of the Treasurer.

Mileage will be reimbursed at the federal Internal Revenue Service rate.

CONFLICT OF INTEREST POLICY
2008

Due to increased scrutiny of non-profit organizations, by the IRS and requirements for increased transparency, USAHA should have in place a conflict of interest policy for its Board of Directors, Officers and Employees.

Policy:

Any member or employee involved in a business transaction of the United States Animal Health Association in which a conflict of interest may be present, shall notify the Executive Committee promptly. Said individual shall refrain from voting on such transactions, and exclude themselves from deliberations. The individual will refrain from any personal influence on the transaction. A transaction that involves a conflict of interest should be reviewed against relative competitive bids or proposals. Decisions to pursue a transaction with a potential conflict of interest should first uphold the best interests of USAHA, and include terms that are reasonable to USAHA within the given marketplace.

Approvals will be made by the Executive Committee. A written disclosure summarizing any possible conflict of interest shall be kept on file at the USAHA office. Discussion and resolution shall be indicated in the minutes of the USAHA Executive Committee session.

Conflict of interest should be disclosed if: a transaction of USAHA involves any close relative of a Director or Employee as the direct vendor/provider, or the Director/Employee stands material gain through a transaction. A Director or Employee holds financial interest if holdings are of 5% or greater of the potential vendor, or holds position of influence with an organization that seeks to do business with USAHA.

A close relative is defined as any parent, spouse, sibling, child, grandchild, or spouse of the aforementioned. Also to be included would be any individual residing in the same household that would resemble a parental or marital relationship.

WHISTLEBLOWER POLICY
2008

Employees and members of USAHA should report illegal or unethical activities, directly relating to the business of USAHA, to the President. The President, in consultation with the Executive Committee, will then determine appropriate actions for investigation, reporting to proper authorities, and reconciliation as necessary.

Employees and members will be provided full confidentiality for reporting such activities, and the President and Executive Committee will ensure due diligence in protecting against retaliation by the organization, its members or other employees and supervisors.
DOCUMENT RETENTION AND DESTRUCTION POLICY

2008

USAHA will maintain all financial records for seven years. They will then be disposed of by either cross-shredding or incineration.

Meeting registrations and membership renewals will be kept for three years.

USAHA PROFESSIONAL DEVELOPMENT SUPPORT

2011

USAHA sees the importance of continuing education for its employees. USAHA may support the opportunities sought by its employees to enhance his/her skill sets. The following is an outline of benefit for employees.

USAHA may provide support as follows:

General

Support for professional development must be pre-approved by the employee’s supervisor prior to commitment in order to receive benefits. Any opportunity should be directly beneficial to current job functions or can be justified as direct future benefit to the Association.

Flexible Scheduling

USAHA may work with employee to accommodate scheduling of work hours to allow for professional development. This can include:

- University/College courses during normal work hours
- Conferences/seminars for professional development
- Other events with pre-approval of supervisor

Employees should strive to maintain a full work week (40 hours) by making up any lost time at hours mutually agreed upon by employee and supervisor.

Academic Courses

USAHA may support tuition for courses directly beneficial to the employee’s job duties, up to $1000 per fiscal year. Tuition will be reimbursed upon completion of the course by the employee, with a minimum of a C grade or relative “passing” status when grading is not applicable. Courses will be considered regardless of degree/non-degree track.

(*Reimbursements are a taxable benefit.)

Conference/Seminar Registration

USAHA may support registration costs for conferences, seminars or other related courses (self-directed, web-based, etc.) Such programs should enhance the employee’s ability to do current job functions, or expand skill sets to take on additional duties. USAHA may support up to three conferences per year to a maximum of $1000, unless employee is taking academic courses.

Travel

Travel, lodging and meals are reimbursable at federal per diem rates for development opportunities outside of local meetings, such as the St. Joseph or Kansas City areas.
III. C. Previous Meetings of the United States Animal Health Association
### III. C. PREVIOUS MEETINGS

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Place of Meeting</th>
<th>President</th>
<th>Secretary/Executive</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sept. 27-28, 1897 †</td>
<td>Fort Worth, TX</td>
<td>*Mr. C.P. Johnston, Springfield, IL</td>
<td>*Mr. D. O. Lively, Fort Worth, TX</td>
</tr>
<tr>
<td>2</td>
<td>Oct. 11-12, 1898</td>
<td>Omaha, NE</td>
<td>*Mr. C.P. Johnston, Springfield, IL</td>
<td>*Mr. Taylor Riddle, KS</td>
</tr>
<tr>
<td>3</td>
<td>Oct. 11-12, 1899 ††</td>
<td>Chicago, IL</td>
<td>*Mr. C.P. Johnston, Springfield, IL</td>
<td>*Mr. Mortimer Levering, Lafayette, IN</td>
</tr>
<tr>
<td>4</td>
<td>Oct. 2-3,1900</td>
<td>Louisville, KY</td>
<td>*Mr. C.P. Johnston, Springfield, IL</td>
<td>*Dr. E.T. Eisenman, Louisville, KY</td>
</tr>
<tr>
<td>5</td>
<td>Oct. 8-9,1901</td>
<td>Buffalo, NY</td>
<td>* Dr. E.P. Niles, VA</td>
<td>*Dr. E.T. Eisenman, Louisville, KY</td>
</tr>
<tr>
<td>6</td>
<td>Sept. 23-24, 1902</td>
<td>Wichita, KS</td>
<td>*Mr. W.H. Dunn, TN</td>
<td>*Mr. Wm. P. Smith, Monticello, IL</td>
</tr>
<tr>
<td>7</td>
<td>Sept. 22-23, 1903</td>
<td>Denver, CO</td>
<td>*Mr. E. Bolton, Woodward, OK</td>
<td>*Mr. Wm. P. Smith, Monticello, IL</td>
</tr>
<tr>
<td>8</td>
<td>Aug. 23-24, 1904</td>
<td>St. Louis, MO</td>
<td>*Dr. J.C. Norton, AZ</td>
<td>*Mr. Wm. P. Smith, Monticello, IL</td>
</tr>
<tr>
<td>9</td>
<td>Aug. 15-16, 1905</td>
<td>Guthrie, OK</td>
<td>*Mr. Wm. P. Smith, Monticello, IL</td>
<td>*Dr. S. H. Ward, St. Paul, MN</td>
</tr>
<tr>
<td>10</td>
<td>Aug. 15-16, 1906</td>
<td>Springfield, IL</td>
<td>*Mr. M. M. Hankins, Quanah, TX</td>
<td>*Dr. S. H. Ward, St. Paul, MN</td>
</tr>
<tr>
<td>11</td>
<td>Sept. 16-17, 1907</td>
<td>Richmond, VA</td>
<td>*Dr. D. F. Luckey, Columbia, MD</td>
<td>*Dr. S. H. Ward, St. Paul, MN</td>
</tr>
<tr>
<td>12</td>
<td>Sept. 14-16, 1908</td>
<td>Washington, DC</td>
<td>*Dr. Charles G. Lamb, CO</td>
<td>*Dr. S. H. Ward, St. Paul, MN</td>
</tr>
<tr>
<td>13</td>
<td>Sept. 13-15, 1909 ‡</td>
<td>Chicago, IL</td>
<td>*Dr. W. H. Dalrymple, Baton Rouge, LA</td>
<td>*Dr. S. H. Ward, St. Paul, MN</td>
</tr>
<tr>
<td>14</td>
<td>Dec. 5-7,1910</td>
<td>Chicago, IL</td>
<td>*Dr. C. E. Cotton, St. Paul, MN</td>
<td>*Mr. J. J. Ferguson, Chicago, IL</td>
</tr>
<tr>
<td>15</td>
<td>Dec. 5-6,1911</td>
<td>Chicago, IL</td>
<td>*Dr. John F. Devine, Goshen, NY</td>
<td>*Mr. J. J. Ferguson, Chicago, IL</td>
</tr>
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<td>16</td>
<td>Dec. 3-5,1912</td>
<td>Chicago, IL</td>
<td>*Dr. Macyck P. Ravener, Madison, WI</td>
<td>*Mr. J. J. Ferguson, Chicago, IL</td>
</tr>
<tr>
<td>17</td>
<td>Dec. 2-4,1913</td>
<td>Chicago, IL</td>
<td>*Dr. Peter F. Bahnsen, Atlanta, GA</td>
<td>*Mr. J. J. Ferguson, Chicago, IL</td>
</tr>
<tr>
<td>18</td>
<td>Feb. 16-18, 1914</td>
<td>Chicago, IL</td>
<td>*Dr. S.H. Ward, St. Paul, MN</td>
<td>*Mr. J. J. Ferguson, Chicago, IL</td>
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<tr>
<td>19</td>
<td>Dec. 2-3,1915</td>
<td>Chicago, IL</td>
<td>*Dr. J. L. Gibson, Des Moines, IA</td>
<td>*Mr. J. J. Ferguson, Chicago, IL</td>
</tr>
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<td>20</td>
<td>Dec. 5-7,1916</td>
<td>Chicago, IL</td>
<td>*Dr. O. E. Dyson, Springfield, IL</td>
<td>*Mr. J. J. Ferguson, Chicago, IL</td>
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<tr>
<td>21</td>
<td>Dec. 3-5,1917</td>
<td>Chicago, IL</td>
<td>*Dr. J. G. Wills, Albany NY</td>
<td>*Dr. S. H. Ward, St. Paul, MN</td>
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<tr>
<td>22</td>
<td>Dec. 2-4,1918</td>
<td>Chicago, IL</td>
<td>*Dr. M. Jacob, Knoxville, TX</td>
<td>*Dr. S. H. Ward, St. Paul, MN</td>
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<td>23</td>
<td>Dec. 1-3,1919</td>
<td>Chicago, IL</td>
<td>*Dr. G. W. Dumphy, Lansing, MI</td>
<td>*Dr. D. M. Campbell, Chicago, IL</td>
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<tr>
<td>24</td>
<td>Nov. 29-Dec. 1, 1920</td>
<td>Chicago, IL</td>
<td>*Dr. S. F. Musselman, Frankfort, KY</td>
<td>*Dr. D. M. Campbell, Chicago, IL</td>
</tr>
<tr>
<td>No.</td>
<td>Date</td>
<td>Place of Meeting</td>
<td>President</td>
<td>Secretary/Executive</td>
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<td>25</td>
<td>Nov. 28-30, 1921</td>
<td>Chicago, IL</td>
<td>*Dr. W. F. Crewe, Bismarck, MD</td>
<td>*Dr. Theo. Burnett, Columbus, OH</td>
</tr>
<tr>
<td>26</td>
<td>Dec. 6-8, 1922</td>
<td>Chicago, IL</td>
<td>*Dr. T. E. M. Munce, Harrisburg, PA</td>
<td>*Dr. Theo. Burnett, Columbus, OH</td>
</tr>
<tr>
<td>27</td>
<td>Dec. 5-7, 1923</td>
<td>Chicago, IL</td>
<td>*Dr. W.J. Butler, Helena, MT</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<tr>
<td>28</td>
<td>Dec. 3-5, 1924</td>
<td>Chicago, IL</td>
<td>*Dr. J. G. Ferneyhough, Richmond, VA</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<td>29</td>
<td>Dec. 2-4, 1925</td>
<td>Chicago, IL</td>
<td>*Dr. J. H. McNeil, Trenton, NJ</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<td>30</td>
<td>Dec. 1-3, 1926</td>
<td>Chicago, IL</td>
<td>*Dr. John R. Mohler, Washington, DC</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<tr>
<td>31</td>
<td>Nov. 30-Dec. 2, 1927</td>
<td>Chicago, IL</td>
<td>*Dr. L. Van Es, Lincoln, NE</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<td>32</td>
<td>Dec. 5-7, 1928</td>
<td>Chicago, IL</td>
<td>*Dr. C. A. Cary, Auburn, AL</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<td>33</td>
<td>Dec. 4-6, 1929</td>
<td>Chicago, IL</td>
<td>*Dr. Chas. O. Lamb, Denver, CO</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<tr>
<td>34</td>
<td>Dec. 3-5, 1930</td>
<td>Chicago, IL</td>
<td>*Dr. A. E. Wright, Washington, DC</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<tr>
<td>35</td>
<td>Dec. 2-4, 1931</td>
<td>Chicago, IL</td>
<td>*Dr. J. W. Connaway, Columbia, MD</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<td>36</td>
<td>Nov. 30-Dec. 2, 1932</td>
<td>Chicago, IL</td>
<td>*Dr. Peter Malcolm, Des Moines, IA</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<td>37</td>
<td>Dec. 6-8, 1933</td>
<td>Chicago, IL</td>
<td>*E. T. Faulder, Albany, NY</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<td>38</td>
<td>Dec. 5-7, 1934</td>
<td>Chicago, IL</td>
<td>*Dr. T. E. Robinson, Providence, RI</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<tr>
<td>39</td>
<td>Dec. 4-6, 1935</td>
<td>Chicago, IL</td>
<td>*Dr. Edward Records, Reno, NV</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<td>40</td>
<td>Dec. 2-4, 1936</td>
<td>Chicago, IL</td>
<td>*Dr. Walter Wisnicky, Madison, WI</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<td>41</td>
<td>Dec. 1-3, 1937</td>
<td>Chicago, IL</td>
<td>*Dr. R. W. Smith, Concord, NH</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<tr>
<td>42</td>
<td>Nov. 30-Dec. 2, 1938</td>
<td>Chicago, IL</td>
<td>*Dr. D. E. Westmoreland, Frankfort, KY</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<tr>
<td>43</td>
<td>Dec. 6-8, 1939</td>
<td>Chicago, IL</td>
<td>*Dr. J. L. Axby, Indianapolis, IN</td>
<td>*Dr. O.E. Dyson, Kansas City, MO</td>
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<td>44</td>
<td>Dec. 4-6, 1940</td>
<td>Chicago, IL</td>
<td>*Dr. H. D. Port, Cheyenne, WY</td>
<td>*Dr. Mark Welsh, College Park, MD</td>
</tr>
<tr>
<td>45</td>
<td>Dec. 3-5, 1941</td>
<td>Chicago, IL</td>
<td>*Dr. E. A. Crossman, Boston, MA</td>
<td>*Dr. Mark Welsh, College Park, MD</td>
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<td>46</td>
<td>Dec. 2-4, 1942</td>
<td>Chicago, IL</td>
<td>*Dr. I. S. McAdory, Auburn, AL</td>
<td>*Dr. Mark Welsh, College Park, MD</td>
</tr>
<tr>
<td>47</td>
<td>Dec. 1-3, 1943</td>
<td>Chicago, IL</td>
<td>*Dr. W. H. Hendricks, Salt Lake City, UT</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<td>48</td>
<td>Dec. 6-8, 1944</td>
<td>Chicago, IL</td>
<td>*Dr. J. M. Sutton, Atlanta, GA</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<td>No.</td>
<td>Date</td>
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<td>Secretary/Executive</td>
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<td>49</td>
<td>Dec. 5-7, 1945</td>
<td>Chicago, IL</td>
<td>*Dr. C. U. Duckwork, Sacramento, CA</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<td>50</td>
<td>Dec. 4-6, 1946</td>
<td>Chicago, IL</td>
<td>*Dr. William Moore, Raleigh, NC</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<tr>
<td>51</td>
<td>Dec. 3-5, 1947</td>
<td>Chicago, IL</td>
<td>*Dr. Will J. Miller, Topeka, KS</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<tr>
<td>52</td>
<td>Oct. 13-15, 1948</td>
<td>Denver, CO</td>
<td>*Dr. Jean V. Knapp, Tallahassee, FL</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
</tr>
<tr>
<td>53</td>
<td>Oct. 12-14, 1949</td>
<td>Columbus, OH</td>
<td>*Dr. T. O. Brandenburg, Bismarck, ND</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
</tr>
<tr>
<td>54</td>
<td>Nov. 1-3, 1950</td>
<td>Phoenix, AZ</td>
<td>*Dr. C. P. Bishop, Harrisburg, PA</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<tr>
<td>55</td>
<td>Nov. 14-16, 1951</td>
<td>Kansas City, KS</td>
<td>*Mr. F. E. Mollin, Denver, CO</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<tr>
<td>56</td>
<td>Oct. 29-31, 1952</td>
<td>Louisville, KY</td>
<td>*Dr. Ralph L. West, St. Paul, MN</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<tr>
<td>57</td>
<td>Sept. 23-25, 1953</td>
<td>Atlantic City, NJ</td>
<td>*Dr. T. Childs, Ottawa, Canada</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<tr>
<td>58</td>
<td>Nov. 10-12, 1954</td>
<td>Omaha, NE</td>
<td>*Dr. T. C. Green, Charleston, WV</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<tr>
<td>59</td>
<td>Nov. 16-18, 1955</td>
<td>New Orleans, LA</td>
<td>*Dr. H. E. Wilkins, Helena, MT</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<td>60</td>
<td>Nov. 28-30, 1956</td>
<td>Chicago, IL</td>
<td>*Dr. A. L. Brueckner, Baltimore, MD</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<td>61</td>
<td>Nov. 13-15, 1957</td>
<td>St. Louis, MO</td>
<td>*Dr. G. H. Good, Cheyenne, WY</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<td>62</td>
<td>Nov. 4-6, 1958</td>
<td>Miami Beach, FL</td>
<td>*Dr. John G. Milligan, Montgomery, AL</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<tr>
<td>63</td>
<td>Nov. 15-18, 1959</td>
<td>San Francisco, CA</td>
<td>*Mr. F. G. Buzzell, Augusta, ME</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<td>64</td>
<td>Oct. 17-21, 1960</td>
<td>Charleston, WV</td>
<td>*Dr. J. R. Hay, Chicago, IL</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<td>65</td>
<td>Oct. 30-Nov. 3, 1961</td>
<td>Minneapolis, MN</td>
<td>*Dr. A. P. Schneider, Boise, ID</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<td>66</td>
<td>Oct. 30-Nov. 2, 1962</td>
<td>Washington, DC</td>
<td>*Dr. W. L. Bendix, Richmond, VA</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<tr>
<td>67</td>
<td>Oct. 15-18, 1963</td>
<td>Albuquerque, NM</td>
<td>*Dr. T. J. Grennan, Jr. Providence, RI</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<td>69</td>
<td>Oct. 25-29, 1965</td>
<td>Lansing, MI</td>
<td>*Dr. J. W. Safford, Helena, MT</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<td>70</td>
<td>Oct. 10-14, 1966</td>
<td>Buffalo, NY</td>
<td>*Dr. C. L. Campbell, Tallahassee, FL</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<td>71</td>
<td>Oct. 16-20, 1967</td>
<td>Phoenix, AZ</td>
<td>*Dr. Grant S. Kaley, Albany, NY</td>
<td>*Dr. R. A. Hendershott, Trenton, NJ</td>
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<td>72</td>
<td>Oct. 6-11, 1968</td>
<td>New Orleans, LA</td>
<td>*Dr. John F. Quinn, Lansing, MI</td>
<td>*Dr. W.L. Bendix, Richmond, VA</td>
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<tr>
<td>No.</td>
<td>Date</td>
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<td>President</td>
<td>Secretary/Executive</td>
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<td></td>
<td>Oct. 12-19, 1969</td>
<td>Milwaukee, WI</td>
<td>*Dr. John L. Oharra, Reno, NV</td>
<td>*Dr. W.L. Bendix, Richmond, VA</td>
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<td>74</td>
<td>Oct. 18-23, 1970</td>
<td>Philadelphia, PA</td>
<td>*Dr. Frank B. Wheeler, Baton Rouge, LA</td>
<td>*Dr. W.L. Bendix, Richmond, VA</td>
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<tr>
<td>75</td>
<td>Oct. 24-29, 1971</td>
<td>Oklahoma City, OK</td>
<td>*Dr. M.D. Mitchell, Pierre, SD</td>
<td>*Dr. W.L. Bendix, Richmond, VA</td>
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<td>76</td>
<td>Nov. 5-10, 1972</td>
<td>Miami Beach, FL</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
<td>*Dr. W.L. Bendix, Richmond, VA</td>
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<td>77</td>
<td>Oct. 14-19, 1973</td>
<td>St. Louis, MO</td>
<td>*Dr. W. C. Tobin, Denver, CO</td>
<td>*Dr. W.L. Bendix, Richmond, VA</td>
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<td>78</td>
<td>Oct. 13-18, 1974</td>
<td>Roanoke, VA</td>
<td>*Mr. O. H. Timm, Dixon, CA</td>
<td>*Dr. W.L. Bendix, Richmond, VA</td>
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<tr>
<td>79</td>
<td>Nov. 2-7, 1975</td>
<td>Portland, OR</td>
<td>*Dr. J. E. Andrews, Atlanta, GA</td>
<td>*Dr. W.L. Bendix, Richmond, VA</td>
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<tr>
<td>80</td>
<td>Nov. 7-12, 1976</td>
<td>Miami Beach, FL</td>
<td>*Dr. H. E. Goldstein, Columbus, OH</td>
<td>*Dr. W.L. Bendix, Richmond, VA</td>
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<td>81</td>
<td>Oct. 16-21, 1977</td>
<td>Minneapolis, MN</td>
<td>*Dr. A. E. Janawicz, Montpelier, VT</td>
<td>*Dr. W.L. Bendix, Richmond, VA</td>
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<td>82</td>
<td>Oct. 21-Nov. 3, 1978</td>
<td>Buffalo, NY</td>
<td>**Dr. L. E. Bartell, Sacramento, CA</td>
<td>*Dr. W.L. Bendix, Richmond, VA</td>
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<td>83</td>
<td>Oct. 28-Nov. 2, 1979</td>
<td>San Diego, CA</td>
<td>*Dr. T. F. Zweigart, Raleigh, NC</td>
<td>*Dr. J. C. Shook, Hyattsville, MD</td>
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<td>84</td>
<td>Nov. 2-7, 1980</td>
<td>Louisville, KY</td>
<td>*Mr. B. W. Hawkins, Ontario, OR</td>
<td>*Dr. J. C. Shook, Hyattsville, MD</td>
</tr>
<tr>
<td>85</td>
<td>Oct. 11-16, 1981</td>
<td>St. Louis, MO</td>
<td>*Dr. L. W. Hinchman, Indianapolis, IN</td>
<td>*Dr. J. C. Shook, Hyattsville, MD</td>
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<td>86</td>
<td>Nov. 7-12, 1982</td>
<td>Nashville, TN</td>
<td>*Dr. G. B. Rea, Salem, OR</td>
<td>*Dr. J. C. Shook, Hyattsville, MD</td>
</tr>
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<td>87</td>
<td>Oct. 15-21, 1983</td>
<td>Las Vegas, NV</td>
<td>Dr. J. R. Ragan, Nashville, TN</td>
<td>*Dr. J. C. Shook, Annapolis, MD</td>
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<tr>
<td>88</td>
<td>Oct. 21-26, 1984</td>
<td>Fort Worth, TX</td>
<td>*Mr. J. O. Pearce, Jr. Okeechobee, FL</td>
<td>*Dr. J. C. Shook, Annapolis, MD</td>
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<tr>
<td>89</td>
<td>Oct. 27-Nov. 1, 1985</td>
<td>Milwaukee, WI</td>
<td>*Dr. David U. Walker, Montpelier, VT</td>
<td>*Dr. J. C. Shook, Annapolis, MD</td>
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<td>90</td>
<td>Oct. 14-19, 1986</td>
<td>Louisville, KY</td>
<td>*Dr. N. W. Kruse, Lincoln, NE</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
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<td>91</td>
<td>Oct. 25-30, 1987</td>
<td>Salt Lake City, UT</td>
<td>*Dr. J. F. Hudelson, Denver, Co</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
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<tr>
<td>92</td>
<td>Oct. 16-21, 1988</td>
<td>Little Rock, AR</td>
<td>*Dr. J. A. Cobb, Atlanta, GA</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
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<td>93</td>
<td>Oct. 28-Nov. 3, 1989</td>
<td>Las Vegas, NV</td>
<td>Mr. P. E. Bradshaw, Griggsville, IL</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
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<td>94</td>
<td>Oct. 6-12, 1990</td>
<td>Denver, CO</td>
<td>Dr. M. A. Van Buskirk, Harrisburg, PA</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
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<td>95</td>
<td>Oct. 26-Nov. 1, 1991</td>
<td>San Diego, CA</td>
<td>*Dr. P. L. Smith, Sacramento, CA</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
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<tr>
<td>96</td>
<td>Oct. 31-Nov. 6, 1992</td>
<td>Louisville, KY</td>
<td>Dr. J. Lee Alley, Montgomery, AL</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
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### III. C. PREVIOUS MEETINGS

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<th>No.</th>
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<th>Secretary/Executive</th>
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<td>97</td>
<td>Oct. 23-29, 1993</td>
<td>Las Vegas, NV</td>
<td>Dr. T. J. Hagerty, St. Paul, MN</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
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<td>98</td>
<td>Oct. 29-Nov. 4, 1994</td>
<td>Grand Rapids, MI</td>
<td>*Mr. J. B. Finley, Jr., Encinal, TX</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
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<td>99</td>
<td>Oct. 28-Nov. 3, 1995</td>
<td>Reno, NV</td>
<td>Dr. H. Wesley Towers, Dover, DE</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
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<td>100</td>
<td>Oct. 12-18, 1996</td>
<td>Little Rock, AR</td>
<td>Dr. M. R. Marshall, Salt Lake City, UT</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
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<td>101</td>
<td>Oct. 17-24, 1997</td>
<td>Louisville, KY</td>
<td>Dr. Larry L. Williams, Lincoln NE</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
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<td>102</td>
<td>Oct. 3-9, 1998</td>
<td>Minneapolis, MN</td>
<td>Dr. Jones W. Bryan, Columbia, SC</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
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<td>103</td>
<td>Oct. 7-14, 1999</td>
<td>San Diego, CA</td>
<td>Dr. Richard H. McCapes, Davis, CA</td>
<td>*Dr. J. C. Shook, Mechanicsburg, PA</td>
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<td>104</td>
<td>Oct. 19-26, 2000</td>
<td>Birmingham, AL</td>
<td>Dr. Ernest W. Zirkle, Trenton, NJ</td>
<td>Dr. J Lee Alley, Montgomery, AL</td>
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<td>105</td>
<td>Nov. 1-8, 2001</td>
<td>Hershey, PA</td>
<td>Dr. Bob R. Hillman, Boise, ID</td>
<td>Dr. J Lee Alley, Montgomery, AL</td>
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<td>106</td>
<td>Oct. 17-24, 2002</td>
<td>St. Louis, MO</td>
<td>Dr. Maxwell Lea, Jr., Baton Rouge, LA</td>
<td>Dr. J Lee Alley, Montgomery, AL</td>
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<td>107</td>
<td>Oct. 9-16, 2003</td>
<td>San Diego, CA</td>
<td>*Mr. Bob Frost, Lincoln, CA</td>
<td>Dr. J Lee Alley, Montgomery, AL</td>
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<td>108</td>
<td>Oct. 21-27, 2004</td>
<td>Greensboro, NC</td>
<td>Dr. Donald Lein, Ithaca, NY</td>
<td>Dr. J Lee Alley, Montgomery, AL</td>
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<td>109</td>
<td>Nov. 3-9, 2005</td>
<td>Hershey, PA</td>
<td>Dr. Richard D. Willer, Phoenix, AZ</td>
<td>Dr. J Lee Alley, Montgomery, AL</td>
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<td>110</td>
<td>Oct. 12-18, 2006</td>
<td>Minneapolis, MN</td>
<td>Dr. Bret D. Marsh, Indianapolis, IN</td>
<td>Dr. J Lee Alley, Montgomery, AL</td>
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<tr>
<td>111</td>
<td>Oct. 18-24, 2007</td>
<td>Reno, NV</td>
<td>Dr. Lee M. Myers, Atlanta, GA</td>
<td>§Dr. J Lee Alley, Montgomery, AL / Mr. Benjamin Richey, St. Joseph, MO</td>
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<tr>
<td>112</td>
<td>Oct. 23-29, 2008</td>
<td>Greensboro, NC</td>
<td>Mr. James W. Leafstedt, Alcester, SD</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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<tr>
<td>113</td>
<td>Oct. 8-14, 2009</td>
<td>San Diego, CA</td>
<td>Dr. Donald E. Hoenig, Belfast, ME</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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<td>114</td>
<td>Nov. 11-17, 2010</td>
<td>Minneapolis, MN</td>
<td>Dr. Richard E. Breitmeyer, Sacramento, CA</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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<tr>
<td>115</td>
<td>Sept. 29-Oct. 5, 2011</td>
<td>Buffalo, NY</td>
<td>Dr. Steven L. Halstead, East Lansing, MI</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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<tr>
<td>116</td>
<td>Oct. 18-24, 2012</td>
<td>Greensboro, NC</td>
<td>Dr. David T. Marshall, Raleigh, NC</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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<td>117</td>
<td>Oct. 17-23, 2013</td>
<td>San Diego, CA</td>
<td>Dr. David L. Meeker, Alexandria, VA</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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<td>118</td>
<td>Oct. 16-22, 2014</td>
<td>Kansas City, MO</td>
<td>Dr. Stephen K. Crawford, Concord, NH</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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<td>119</td>
<td>Oct. 22-28, 2015</td>
<td>Providence, RI</td>
<td>Dr. Bruce L. King, Axtell, UT</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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### III. ORGANIZATIONAL MATTERS

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<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Place of Meeting</th>
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<tr>
<td>120</td>
<td>Oct. 13-19, 2016</td>
<td>Greensboro, NC</td>
<td>Dr. David D. Schmitt, Ankeny, IA</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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<td>121</td>
<td>Oct. 12-18, 2017</td>
<td>San Diego, CA</td>
<td>Dr. Boyd H. Parr, Columbia, SC</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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<td>122</td>
<td>Oct. 18-24, 2018</td>
<td>Kansas City, MO</td>
<td>Ms. Barbara C. Determan, Early, IA</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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<tr>
<td>123</td>
<td>Oct. 24-30, 2019</td>
<td>Providence, RI</td>
<td>Dr. Kristin M. Haas, Montpelier, VT</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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<tr>
<td>124</td>
<td>Oct. 15-21, 2020</td>
<td>Nashville, TN</td>
<td>Dr. Marty Zaluski, Helena, MT</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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<td>125</td>
<td>Oct. 21-27, 2021</td>
<td>Denver, CO</td>
<td>Dr. Charles Hatcher, Nashville, TN</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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<td>126</td>
<td>Oct. 6-12, 2022</td>
<td>Minneapolis, MN</td>
<td>Dr. Dustin Oedekoven, Pierre, SD</td>
<td>Mr. Benjamin Richey, St. Joseph, MO</td>
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</table>

**Key**
- * Deceased
- ‡ Last meeting of the Interstate Association of Livestock Sanitary Boards
- ** Resigned Dec. 12, 1977
- § USAHA hired an Executive Director, in lieu of the Secretary, effective 2006-2007
- † Reprinted in 54th Annual Proceedings  †† Reprinted in 66th Annual Proceedings
- ² 2020 was held exclusively virtual due to the Covid-19 pandemic
- † Hybrid Meeting
III. D. USAHA Award Recipients
USAHA MEDAL OF DISTINCTION RECIPIENTS

110th Annual Meeting, Minneapolis, Minnesota – 2006
Dr. Clarence L. Campbell, Tallahassee, Florida
Dr. Richard H. McCapes, Davis, California

111th Annual Meeting, Reno, Nevada – 2007
Dr. J. Lee Alley, Montgomery, Alabama
Mrs. Linda B. Ragland, Richmond, Virginia

Dr. John C. Shook, Mechanicsburg, Pennsylvania

113th Annual Meeting, San Diego, California – 2009
Dr. Bret E. Marsh, Indianapolis, Indiana

114th Annual Meeting, Minneapolis, Minnesota – 2010
Mr. Neal F. Black, Eagan, Minnesota
Dr. Thomas J. Hagerty, St. Michael, Minnesota

Dr. Bob E. Hillman, Boise, Idaho

Dr. John E. Ragan, Bowie, Maryland

117th Annual Meeting, San Diego, California – 2013
Dr. Don H. Lein, Ithaca, New York

118th Annual Meeting, Kansas City, Missouri – 2014
Mr. William T. Hawks, Washington, District of Columbia

119th Annual Meeting, Providence, Rhode Island – 2015
Dr. Richard E. Breitmeyer, Davis, California

120th Annual Meeting, Greensboro, North Carolina – 2016
Mr. Jim W. Leafstedt, Alcester, South Dakota

121st Annual Meeting, San Diego, California – 2017
Mr. Bobby R. Acord, Rocky Point, North Carolina
III. D. USAHA AWARD RECIPIENTS

122nd Annual Meeting, Kansas City, Missouri – 2018
Dr. Donald E. Hoenig, Belfast, Maine

123rd Annual Meeting, Providence, Rhode Island – 2019
Dr. Belinda Thompson, Ithaca, New York

124th Annual Meeting, Virtual – 2020
Dr. John R. Clifford, Stone Mountain, Georgia

125th Annual Meeting, Denver, Colorado (Hybrid) – 2021
Mr. Kevin Shea, Washington, D.C.

126th Annual Meeting, Minneapolis, Minnesota (Hybrid) – 2022
Dr. Annette B. Jones, Sacramento, California
Dr. Boyd H. Parr, Newberry, South Carolina
USAHA FEDERAL PARTNERSHIP AWARD RECIPIENTS

Dr. Jack A. Shere, Raleigh, North Carolina
Dr. William G. Smith, Sutton, Massachusetts

Dr. Donald J. Otto, Knoxville, Iowa

117th Annual Meeting, San Diego, California – 2013
Dr. Donald E. Evans, Topeka, Kansas

118th Annual Meeting, Kansas City, Missouri – 2014
Dr. Sarah M. Tomlinson, Fort Collins, Colorado

119th Annual Meeting, Providence, Rhode Island – 2015
Dr. Kevin L. Petersburg, Des Moines, Iowa

120th Annual Meeting, Greensboro, North Carolina – 2016
Dr. Angela M. Pelzel-McCluskey, Fort Collins, Colorado

121st Annual Meeting, San Diego, California – 2017
Dr. Jonathan T. Zack, Riverdale, Maryland

122nd Annual Meeting, Kansas City, Missouri – 2018
Dr. Jack C. Rhyan, Fort Collins, Colorado

123rd Annual Meeting, Providence, Rhode Island – 2019
Dr. Barb Porter-Spalding, Raleigh, North Carolina

124th Annual Meeting, Virtual – 2020
Dr. Darrel K. Styles, Riverdale, Maryland

125th Annual Meeting, Denver, Colorado (Hybrid) – 2021
Dr. Mitch Palmer, Ames, Iowa

126th Annual Meeting, Minneapolis, Minnesota (Hybrid) – 2022
Dr. Mia “Kim” Torchetti, Ames, Iowa
### OTHER AWARDS

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<tr>
<th>Year</th>
<th>APHIS Administrator’s Award</th>
<th>National Assembly Award</th>
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<tr>
<td>2022</td>
<td>Mr. Paul Zajicek</td>
<td>Dr. Valerie Koenig</td>
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<td>2021</td>
<td>Dr. Richard Frederickson</td>
<td>Mr. Ross Wilson</td>
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<td>2020</td>
<td>Dr. Michael Neault</td>
<td>Dr. Michael Neault</td>
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<td>2019</td>
<td>Dr. Beate Crossley</td>
<td>Dr. Susan Keller</td>
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<td>2018</td>
<td>Dr. Andy Schwartz</td>
<td>Dr. David Schmitt</td>
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<td>2017</td>
<td>Dr. Bruce Akey</td>
<td>Dr. Kent Fowler</td>
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<td>2016</td>
<td>Dr. Annette Jones</td>
<td>Mr. Paul Rodgers</td>
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<td>2015</td>
<td>Dr. Dustin Oedekoven</td>
<td>Dr. Bob Meyer</td>
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<td>2014</td>
<td>Dr. Donald Ritter</td>
<td>Dr. Tom Holt</td>
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<td>Dr. James Roth</td>
<td>Dr. Bill Hartmann</td>
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<td>Dr. Donald Hoenig</td>
<td>Dr. Jim Logan</td>
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<td>2011</td>
<td>Dr. Don Lein</td>
<td>Dr. Taylor Woods</td>
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<td>2010</td>
<td>Dr. Alex Ardans; Dr. Alfonso Torres</td>
<td>Mr. George Teagarden</td>
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<td>2009</td>
<td>Mr. James Leafstedt</td>
<td>Mr. John Adams</td>
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<td>2008</td>
<td>Dr. Claude Barton</td>
<td>Dr. Bret D. Marsh</td>
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<td>2007</td>
<td>Dr. Francois Elvinger</td>
<td>Dr. Bob Hillman</td>
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<td>2006</td>
<td>Dr. Terry McElwain; Dr. Willie Reed</td>
<td>Dr. Sam Holland</td>
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<td>2005</td>
<td>Dr. Bob Hillman</td>
<td>Dr. Richard D. Willer</td>
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<td>2004</td>
<td>Dr. Joan Arnoldi</td>
<td>Dr. Steven England</td>
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<td>2003</td>
<td>Ms. Martha Roberts</td>
<td>Dr. John Huntley</td>
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<td>2002</td>
<td>Mr. Gus Douglas</td>
<td>Dr. Ernest W. Zirkle</td>
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<td>Dr. Richard E. Breitmeyer</td>
<td>Dr. Richard E. Breitmeyer</td>
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<td>2000</td>
<td>Dr. Mo Salman</td>
<td>Dr. H. Wesley Towers, Jr</td>
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<td>Dr. Terry Beals</td>
<td>Dr. Ralph Knowles</td>
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<td>Dr. Marvin Beeman</td>
<td>Dr. Larry L. Williams</td>
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<td>Dr. Elizabeth A. Lautner</td>
<td>Dr. Terry L. Beals</td>
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<td>Dr. Paul B. Doby</td>
<td>Dr. J. Lee Alley</td>
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<td>1995</td>
<td>Mr. Philip E. Bradshaw</td>
<td>Dr. Lewis P. Thomas</td>
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<td>1994</td>
<td>Mr. Neal Black</td>
<td>Dr. J. C. Shook</td>
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<td>1993</td>
<td>Mrs. Ella Blanton</td>
<td>Dr. Calvin W. S. Lum</td>
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<td>Year</td>
<td>APHIS Administrator’s Award</td>
<td>National Assembly Award</td>
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<tr>
<td>1992</td>
<td>Dr. Pat Smith</td>
<td>Dr. Patton L. Smith</td>
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<td>1991</td>
<td>Dr. C. L. Campbell</td>
<td>Dr. Paul B. Doby</td>
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<td>1990</td>
<td>Dr. David T. Berman</td>
<td>Dr. Clarence L. Campbell</td>
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<tr>
<td>1989</td>
<td>Mr. John B. Armstrong</td>
<td>Ms. Mabel Owen</td>
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<tr>
<td>1988</td>
<td>Dr. Frank A. Hayes</td>
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<tr>
<td>1987</td>
<td>Dr. Robert P. Hanson</td>
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<td>1986</td>
<td>Dr. Benjamin S. Pomeroy</td>
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<td>1985</td>
<td>Dr. J. G. Flint</td>
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<td>1984</td>
<td>Dr. William C. Tobin</td>
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<td>1983</td>
<td>Dr. Harold E. Nadler</td>
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<td>1982</td>
<td>Dr. John L. O’Harra</td>
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<td>1981</td>
<td>Dr. J. D. Lamont</td>
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<td>1980</td>
<td>Dr. John F. Quinn</td>
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<td>1979</td>
<td>Dr. A. G. Boyd</td>
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<td>1978</td>
<td>Mr. Francis Buzzell</td>
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<td>1977</td>
<td>Dr. Jay Arthur Myers</td>
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IV. APPENDIX

A. GLOSSARY OF COMMONLY USED ACRONYMS
<table>
<thead>
<tr>
<th>Acronym</th>
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<tbody>
<tr>
<td>AAEP</td>
<td>American Association of Equine Practitioners</td>
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<tr>
<td>ADRU</td>
<td>Animal Disease Research Unit</td>
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<tr>
<td>ADT</td>
<td>Animal Disease Traceability</td>
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<tr>
<td>AFWA</td>
<td>Association of Fish and Wildlife Agencies</td>
</tr>
<tr>
<td>AHC</td>
<td>American Horse Council</td>
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<tr>
<td>AHS</td>
<td>African Horse Sickness</td>
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<tr>
<td>AMP</td>
<td>Account Management Partner</td>
</tr>
<tr>
<td>AMR</td>
<td>Antimicrobial resistance</td>
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<tr>
<td>ANPR</td>
<td>Advance notice of proposed rulemaking</td>
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<tr>
<td>APA</td>
<td>Administrative Procedure Act</td>
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<tr>
<td>AQHA</td>
<td>American Quarter Horse Association</td>
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<tr>
<td>ARS</td>
<td>Agricultural Research Service</td>
</tr>
<tr>
<td>ASI</td>
<td>Animals &amp; Society Institute</td>
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<tr>
<td>AVIC</td>
<td>Area Veterinarian in Charge</td>
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<tr>
<td>BAPA</td>
<td>Buffered acidified plate antigen</td>
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<tr>
<td>BCG</td>
<td>Bacille Calmette-Guérin</td>
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<tr>
<td>BSE</td>
<td>Bovine spongiform encephalopathy</td>
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<tr>
<td>BTV</td>
<td>Bluetongue virus</td>
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<tr>
<td>CAHPS</td>
<td>Comprehensive Aquaculture Health Program Standards</td>
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<tr>
<td>CBC</td>
<td>Complete Blood Count</td>
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<tr>
<td>CCT</td>
<td>Comparative Cervical Test</td>
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<tr>
<td>CEAH</td>
<td>Center for Epidemiology and Animal Health</td>
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<tr>
<td>CEM</td>
<td>Contagious Equine Metritis</td>
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<td>CertAqV</td>
<td>Certified Aquatic Veterinarian</td>
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<td>CFTEP</td>
<td>Cattle Fever Tick Eradication Program</td>
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<tr>
<td>CTESA</td>
<td>Commercial Transport of Equines to Slaughter Act</td>
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<tr>
<td>CVI</td>
<td>Certificate of veterinary inspection</td>
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<tr>
<td>CWD</td>
<td>Chronic wasting disease</td>
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<tr>
<td>D&amp;B</td>
<td>Diagnostics &amp; Biologics</td>
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<tr>
<td>DNA</td>
<td>Deoxyribonucleic acid</td>
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<tr>
<td>DPP</td>
<td>Dual Path Platform</td>
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<tr>
<td>DROs</td>
<td>Direct Reporting Organizations</td>
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<tr>
<td>DSA</td>
<td>Designated Surveillance Area</td>
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<tr>
<td>ECM</td>
<td>Extracellular matrix</td>
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<tr>
<td>EDCC</td>
<td>Equine Disease Communication Center</td>
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<td>EDS</td>
<td>Egg Drop Syndrome</td>
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<tr>
<td>EDWG</td>
<td>Exercises and Drills Working Group</td>
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<tr>
<td>EEE</td>
<td>Eastern equine encephalitis</td>
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<tr>
<td>EHDV</td>
<td>Epizootic hemorrhagic disease virus</td>
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<tr>
<td>EHM</td>
<td>Equine herpesvirus myeloencephalopathy</td>
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<td>EHV</td>
<td>Equine Herpesvirus</td>
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<td>Acronym</td>
<td>Description</td>
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<tr>
<td>EIA</td>
<td>Equine Infectious Anemia</td>
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<td>EIAV</td>
<td>Equine Infectious Anemia Virus</td>
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<td>ELISA</td>
<td>Enzyme-linked immunosorbent assay</td>
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<tr>
<td>EMRS</td>
<td>Emergency Management Response System</td>
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<tr>
<td>EP</td>
<td>Equine Piroplasmosis</td>
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<td>EVA</td>
<td>Equine Viral Arteritis</td>
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<td>FAD</td>
<td>Foreign Animal Disease</td>
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<tr>
<td>FADDL</td>
<td>Foreign Animal Disease Diagnostic Laboratory</td>
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<tr>
<td>FADDS</td>
<td>Foreign animal disease diagnosticians</td>
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<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<tr>
<td>FBI</td>
<td>Federal Bureau of Investigation</td>
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<tr>
<td>FMD</td>
<td>Foot and mouth disease</td>
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<tr>
<td>FPA</td>
<td>Fluorescence polarization assay</td>
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<td>FUDS</td>
<td>Focal Ulcerative Dermatitis Syndrome</td>
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<tr>
<td>GF-TADS</td>
<td>Global Framework for Transboundary Animal Diseases</td>
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<tr>
<td>GYA</td>
<td>Greater Yellowstone Area</td>
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<td>HCP</td>
<td>Herd Certification Program</td>
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<td>HPAI</td>
<td>Highly Pathogenic Avian Influenza</td>
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<td>IAB</td>
<td>Industry advisory board</td>
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<td>ICG</td>
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<td>MAZ</td>
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<td>MLV</td>
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<td>NAHMS</td>
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<td>Acronym</td>
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<td>NBEP</td>
<td>National Brucellosis Eradication Program</td>
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<tr>
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<td>NLRAD</td>
<td>National List of Reportable Animal Diseases</td>
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<td>Not-ready-to-eat</td>
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<td>NSAIDs</td>
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<td>NVSL</td>
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<tr>
<td>OFFLU</td>
<td>Network of Expertise on Animal Influenza Organization</td>
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<td>OGC</td>
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<td>POC</td>
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<td>PrP</td>
<td>Prion protein</td>
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<td>PRRSV</td>
<td>Porcine reproductive and respiratory syndrome virus</td>
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<td>RFP</td>
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<td>rRT-PCR</td>
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<td>Soybean meal</td>
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<td>Acronym</td>
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<td>TH</td>
<td>Temperature and humidity</td>
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<td>UAE</td>
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