World Organisation for Animal Health

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# WOAH Collaborative Centre Reports Activities 2024

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## CENTRE INFORMATION

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| ***Title of WOAH Collaborating Centre** | Animal Disease Surveillance Systems, Risk Analysis and Epidemiological Modelling |
| ***Address of WOAH Collaborating Centre** | Centers for Epidemiology and Animal Health |
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| **Website:** | https://www.aphis.usda.gov/livestock-poultry-disease/epidemiology |
| ***Name Director of Institute (Responsible Official):** | Alan Huddleston |
| ***Name (including Title and Position) of Head of the Collaborating Centre (WOAH Contact Point):** | Alan Huddleston, Director |
| ***Name of the writer:** | Caitlin Jandegian |

## TOR 1 AND 2: SERVICES PROVIDED

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by WOAH

| Category | Title of activity | Scope |
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| | | CEAH staff are participating on the Domestic New World |

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| Disease control (true) | New World Screwworm Task Force | Screwworm Task Force. The purpose of the Task Force is to work on an education/outreach plan, meet training needs, and increase communication/inspections with U.S. Customs and Border Protection. |
| Epidemiology, surveillance, risk assessment, (true) | National Swine, Cattle, and Poultry Condemnation Weekly Reports | CEAH staff produced and shared the National Swine, Cattle, and Poultry Condemnation weekly reports within Veterinary Services and the Food Safety and Inspection Service (FSIS). The main purpose of these reports is to describe, visualize, and summarize FSIS slaughter condemnation data on a weekly basis by swine, cattle, and poultry subclass, reason for condemnation, and geographic catchment basin to compare patterns over time. |
| Training, capacity building (true) | HPAI Biosecurity Auditor Training | CEAH provided subject matter expertise on biosecurity audit data mining as part of an effort to develop training materials for auditors tasked with conducting HPAI biosecurity audits. |
| Wildlife (true) | APHIS Wild Bird Avian Influenza Surveillance Operational Dashboard | CEAH developed a public-facing, map-centric operational dashboard that displays results from samples collected as part of the USDA Wildlife Services National Wildlife Disease Program's wild bird surveillance program. Data is split into high pathogenic and other avian influenza viruses and is updated quarterly. https://www.aphis.usda.gov/aphis/maps/animal-health/wild-bird-avian-flu-surveillance |
| Avian diseases (true) | HPAI Risk Interface Model: Wild Birds to Domestic Poultry | CEAH collaborated with the U.S. Geological Survey and the University of Maryland on a model of spillover risk from wild waterfowl to domestic poultry across the continental United States for the full annual cycle. |
| Aquatic animal diseases (true) | Salmonid Pathogen Pathways Assessment | CEAH protected and improved the health, quality, and marketability of the U.S. aquaculture industry by completing the Pathways Assessment and Hazard Identification documents for six WOAH-listed pathogens in imported live salmonid fish, eggs, and gametes, contributing to the safeguarding of the U.S. aquaculture industry. |
| Disease Control (true) | Provided geospatial and mapping support for the HPAI poultry outbreak in the United | CEAH Geographic Information Systems (GIS) staff provided daily maps for all positive highly pathogenic avian influenza (HPAI) detections (premises) within the United States. Interactive map tools were developed to facilitate safe routing and movement of poultry products to Canada. Other HPAI Zone Location tools were used to verify that poultry products were not coming out of restricted control areas/zones, minimizing impact to trade. Map products were used to communicate with trade partners regarding |

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| | States (2022–2024) | status (open/closed) of restricted geographic areas. Maps were also developed for daily situation reports to show all stages of tasks, including detection, depopulation, cleaning, repopulating premises, and closing quarantine zones. |
| Disease Control (true) | Dairy Cattle Emerging Event: Epidemiological Questionnaire | CEAH staff developed a 22-page HPAI dairy questionnaire and collected data from 144 premises across 14 States as of 30 September 2024. Gathered trends on common clinical signs of HPAI-infected cattle and hypothesized risk factors of disease spread. These data will inform stakeholders and offer insight in how to prevent further spread of the disease. |
| Disease Control (true) | HPAI H5N1 Economic Biosecurity Analysis of Commercial Turkey Operations | Preliminary findings published in HPAI Epidemiologic Analysis of Poultry Flocks (usda.gov). Full manuscript pending journal acceptance. Work was done in collaboration with the University of Arkansas. Produced an information sheet describing challenges in implementing biosecurity practices for commercial turkey and table egg producers using results from the HPAI turkey and table egg producers case control studies. |
| Disease Control (true) | Improving Indemnity Accuracy, Processes, and Procedures | CEAH has started a project to revise the "APHIS Guidelines for Private Appraisals" standard operating procedure. The purpose of this document is to provide specific guidelines on what makes an acceptable livestock appraisal report to USDA's Animal and Plant Health Inspection Service (APHIS). Appraisals are used when there is no readily available data on animal values for indemnity. Our organization is also working with the USDA Office of the General Council to determine if incorporation of overhead, depreciation, and loss of future income can be included in determining indemnity values. An industry group requested the inclusion. Working on indemnity values for the following: – Elk – Table egg laying hens – Captive deer in West Virginia – Doves |
| Disease Control (true) | Supporting the Cattle Fever Tick Eradication Program | CEAH staff are providing support to the Cattle Fever Tick Eradication Program (CFTEP) to complete a series of disease control tasks assigned to CEAH in the fiscal years 2021–2025 CFTEP Strategic and Workforce Plan. A report will be generated by the end of fiscal year 2025. |
| Disease Control (true) | Supporting the National Feral Swine Damage Management Program | CEAH staff are providing quantitative ecological support to the National Feral Swine Damage Management Program with the ultimate goal of controlling disease among feral swine. |
| Epidemiology, Surveillance, | Influenza A Virus in Swine | CEAH produces quarterly and annual reports to provide a brief update on the status of the national surveillance for |

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| Risk Assessment, Modelling (true) | Surveillance Fiscal Year 2024 Quarterly Reports | influenza A Virus (IAV) in swine for producers, swine practitioners, diagnosticians, and the public. https://www.aphis.usda.gov/livestock-poultry-disease/swine/influenza-a-virus |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | National HPAI Disease Spread and Control Model for Poultry | CEAH staff provided multiple modeling tasks requested during the HPAI outbreak in order to: [1] Forecast the number of estimated detections on commercial poultry premises throughout the first six months of fiscal year 2024 to inform funding requests for outbreak response. [2] Estimate the proportion of total commercial poultry detections by operation type to inform funding requests for outbreak response. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | National Foot and Mouth Disease Spread and Control Model | CEAH staff generated disease-spread and control modeling scenarios characterizing potential for Foot and Mouth Disease (FMD) introduction and spread for multiple geographic regions in the United States. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | National African Swine Fever Disease-Spread and Control Model | CEAH staff developed and utilized national disease-spread and control models to examine African swine fever (ASF) spread scenarios, support risk assessments, inform policy decisions, and contribute to preparedness and response planning efforts. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Epidemiologic and Other Analyses of HPAI-Affected Poultry Flocks: 3 September 2024 Interim Report | CEAH staff published a report with the description of the outbreak, phylogenetic analysis and diagnostics (National Veterinary Services Laboratory), case series epidemiologic study, estimating disease spread with the National HPAI Disease Spread Model, time to introduction model in partnership with University of Minnesota, AIV transmission at the wild bird:domestic bird interface in partnership with United States Geological Survey (USGS)/University of Maryland (UMD), AIV surveillance in wild birds (Wildlife Services). |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | CEAH Modeling to Inform H5N1 in Cattle | CEAH is modeling H5N1 in cattle to help in targeting surveillance efforts, determine likely origins of the outbreak, and predict future spread of the disease. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | 2024 U.S. National Animal Health Reporting System (NAHRS) Reportable Diseases, Infections, and Infestations List | CEAH published the updated United States list of reportable animal diseases for 2024 to inform stakeholders of current reportable diseases. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Effects of Media-reported Border Violence and Environmental Conditions on | CEAH provided support to a University of Arkansas modeling project on cattle fever tick in equines. The project is looking at the effects of media-reported border violence |

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| | Cattle Fever Tick Infestation Rates | and environmental conditions on cattle fever tick prevention and control by looking at infestation rates. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Enhancement of Feral Swine Disease Surveillance | CEAH provided subject matter expertise on a plan to expand feral swine disease surveillance through sample collection from feral swine removed from the environment. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | National Surveillance Strategy for HPAI (Dairy Cattle) | CEAH provided subject matter expertise on a plan to develop a national surveillance strategy for HPAI (Dairy Cattle) utilizing the U.S. Disease Outbreak Simulation (USDOS) and U.S. Animal Movement Models (USAMM) on dairy cattle movement. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Equine Arbovirus Dashboard | CEAH developed and maintained a public dashboard showing historical and current equine cases of arboviral disease (eastern equine encephalitis, western equine encephalitis, West Nile virus) that occurred in the United States through 2024. https://www.aphis.usda.gov/livestock-poultry-disease/equine/arbovirus-dashboard |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Outbreak Surveillance Optimization Using Within-Herd Spread Models | CEAH collaborated with the University of Minnesota to develop a within-herd ASF spread model, which is used to evaluate surveillance scenarios to optimize outbreak response planning. New modeling scenarios have been used to evaluate surveillance strategies proposed as part of the U.S. Swine Health Improvement Plan, as well as control zone surveillance for USDA ASF response plans. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | U.S. Swine Hemorrhagic Fevers Integrated Surveillance Plan Dashboard | CEAH published quarterly reports quantifying the U.S. African swine fever (ASF) and classical swine fever (CSF) surveillance efforts in domestic and feral swine. https://www.aphis.usda.gov/aphis/dashboards/tableau/asf-csf-exec-summary-dashboard |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Updated information Related to Certificate of Veterinary Inspections and Improve Data Availability | CEAH is working to update information related to Certificate of Veterinary Inspections and improve data availability. States are being contacted to learn more about where/how States are storing certificate data. Animal movement modeling data for individual States (shipments in and out) will be offered to States as an incentive for participating in the project. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Predicting HPAI H5N1 Bulk Tank Milk rRT-PCR CT Values from Non-clinical Dairy Herds | CEAH analysis was used to inform the development surveillance schemes for multiple response objectives and proposed schemes for disease eradication and estimation of national HPAI prevalence. |
| | | CEAH has a project looking at the number of false positive fluorescence polarization assay (FPA) brucellosis tests States |

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| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Evaluation of FPA Brucellosis Tests | are seeing in cattle (6 to 12 false positives out of 80,000 to 100,000 total FPA tests run). The project will evaluate if these animals could be cleared faster than repeatedly drawing blood at 30-day intervals until the FPA goes down and/or if the upper limit of the FPA range could be raised so that a BAPA-/CF- animal could be cleared with a higher FPA value than where it is currently set at 40. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Modeling the Entry of ASF via the Air Passenger Baggage Pathway | CEAH has a Modeling the Entry of ASF via the Air Passenger Baggage Pathway and Predicting the Quantity of Swine-Origin Quarantine Material Entering the U.S. Undetected through Air Passenger Baggage from Countries Affected by African Swine Fever project. We are using a Bayesian model that will model the movement of at-risk product via passengers, mail, and cargo from countries with foreign animal diseases (FADs) of interest (for example, ASF). The predicted movements of at-risk product will be used to predict the likelihood of FAD introduction. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | North American Foot and Mouth Disease Vaccine Bank | CEAH has been providing expertise to the North American Foot and Mouth Disease Vaccine Bank (NAFMDVB) related to what testing numbers may look like in an ASF outbreak (initial number and the new number with expanded testing). Modeling is being used to estimate numbers. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Bovine Tuberculosis (bTB) Transmission Risk Among Livestock and Wildlife and Evaluation of Control Measures on Moloka'i Island | CEAH is leading the determination of bovine tuberculosis transmission risk among livestock and wildlife and evaluation of control measures on Moloka'i island project. The project objectives include estimation of population densities of feral swine and axis deer, estimation of contact rates among livestock and wildlife, and estimation of bTB prevalence in feral swine, axis deer, and mongoose. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Comparative Cervical Tuberculosis (TB) Test Response Rate in Animals Less Than 18 Months of Age | CEAH staff reviewed and provided comments on a proposed project related to seeing if sufficient data can be gathered from Pennsylvania, Michigan, Delaware, Maryland, and Virginia to distinguish whether there is a difference in TB test response rate in animals less than 18 months of age versus those over 18 months of age. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Specificity of Antibody Testing for Bulk Tank Milk (BTM) Sampling | CEAH is participating in a project looking at the specificity of antibody testing for bulk tank milk sampling and the range of contribution of an individual cow to BTM. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Cattle Fever Tick Data Project | CEAH provided subject matter expertise on a cattle fever tick data project trouble shooting challenges with obtaining premises info (name, identification, latitude/longitude) for Texas surveys. |
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| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Information on TB Test Results from Slaughter Catchment Areas | CEAH staff are leading a project looking at using information on TB test results from slaughter catchment areas (slaughtersheds) to improve disease surveillance sampling efficiency. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Collaboration with the United Kingdom and Sweden on Modeling of HPAI in Livestock | CEAH staff are collaborating with the United Kingdom and Sweden on modeling of HPAI in livestock. Funding is from the National Science Foundation's Ecology and Evolution of Infectious Diseases Program and the United Kingdom's Biotechnology and Biological Sciences Research Council. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Evaluating Wildlife Surveillance for Avian Influenza 2.3.4.4b Virus | CEAH is leading a project evaluating wildlife surveillance for avian influenza 2.3.4.4b virus around affected dairy herds. The evaluation is ongoing as new premises are detected. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Longhorned Tick Hotspot Project | CEAH staff are participating in a longhorned tick hotspot project conducted by the University of Massachusetts – Amherst. Once hotspots are identified, they are investigated for key attributes (livestock markets, migratory bird flyways, major highways) that could influence dispersal of the tick and associated disease. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | ASF Entry Risk for Guam and Other U.S. Territories | CEAH staff are participating in a project modeling ASF entry risk for Guam and other U.S. Territories. The information will be used to target ASF surveillance areas at higher risk for ASF entry. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | National Animal Health Monitoring System (NAHMS) Sheep 2024 Study | CEAH collaborated with the National Agricultural Statistics Service (NASS) to complete a national study of U.S. sheep health, productivity management, and biosecurity. This is the fourth national study of U.S. sheep and provides data to examine trends in the sheep industry from 1996 to 2024. Samples were collected to estimate the prevalence of gastrointestinal parasites, anthelminthic resistance, bacteria causing foot rot, fecal Salmonella, Campylobacter, generic E. coli, and Clostridium, and antimicrobial resistance to these enteric microbes. Samples were also collected to estimate genetic resistance to scrapie in the U.S. flock and to provide sera for future research in the prevalence of other economically important sheep pathogens. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Backyard Animal Keeping study | CEAH conducted a study to estimate backyard ownership, biosecurity, and management of poultry, pigs, goats, and rabbits nationally, and to examine changes in backyard poultry ownership in two metropolitan areas. |
| Epidemiology, Surveillance, | | CEAH updated the annual dashboard of monitored dairy |

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| Risk Assessment, Modelling (true) | Bulk Tank Somatic Cell Count Dashboard | bulk tank somatic cell counts providing 22 years of data trends. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | NAHMS Feedlot 2021 Study Reporting | CEAH published a report on management practices on U.S. feedlots describing feedlot use of veterinarians, antimicrobial use and stewardship, and other factors related to cattle health and management. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | NAHMS Swine 2021 Study Reporting | CEAH published a dashboard on management-related practices on small-enterprise (< 1,000 pigs) swine operations in the United States, and two dashboards on management-related practices on large-enterprise swine operations in the United States. The dashboards cover biosecurity, vaccinations, antimicrobial use, and other factors related to swine health in the United States. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Case Control Study of Mycoplasma bovis In Bison | CEAH staff worked with Colorado State University, the National Park Service, and the Turner Institute of Ecoagriculture to provide subject matter expertise for a case control study of Mycoplasma bovis in bison. The goal of this study is to perform the first U.S. bison herd survey to evaluate risk factors for Mycoplasma bovis to identify potential management techniques for mitigation and epidemiology of disease. Publication is pending submission. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Human and Animal Movements Around HPAI Dairy Facilities | CEAH staff are participating in a project with the California Department of Food and Agriculture team for a network analysis looking at human and animal movements around HPAI dairy facilities with the goals of identifying commonalities and using the information to improve biosecurity. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Genomic Epidemiology of Incursion and Transmission of Mycoplasma bovis | CEAH staff are assisting the Turner Institute of Ecoagriculture, the National Park Service, Vaxxinova, the USDA–Agricultural Research Service, and the USDA–National Veterinary Services Laboratory on the Genomic Epidemiology of Incursion and Transmission of Mycoplasma bovis in bison herds project. This project aims to utilize genomic, herd management, and husbandry data from bison herds to determine evolution and transmission of Mycoplasma bovis over 20 years. |
| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | Sampling of Environments Associated with HPAI-affected Dairies | CEAH staff assisted Colorado State University with a review on the Sampling of Environments Associated with HPAI-affected Dairies project. |
| | | CEAH, in collaboration with the State of Colorado and |

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| Epidemiology, Surveillance, Risk Assessment, Modelling (true) | HPAI Spatial Analysis | Colorado Field Operations, completed a spatial analysis of 64 HPAI-infected dairy premises in Colorado to provide information of mean transmission distance, relative risk of infection at different distances, and identification of optimal surveillance zone sizes. |
| Training, Capacity Building (true) | ASF Technical Working Group | CEAH staff provided subject matter expertise in ASF epidemiology, surveillance, and response planning as part of an APHIS technical working group that included 24 experts from APHIS and State, Federal, and industry partners. The working group assessed U.S. ASF preparedness plans and policies and continues working collaboratively to develop strategies and advance research to strengthen current surveillance, response, depopulation, and disposal plans. |
| Training, Capacity Building (true) | ASF Technical Working Group – Slaughter Plant Working Group | CEAH staff provided subject matter expertise in ASF epidemiology, surveillance, and response planning as part of an APHIS slaughter plant working group that included State, Federal and industry partners. |
| Training, Capacity Building (true) | Training and Exercise Plan Outbreak Surveillance Training Workgroup | CEAH collaborated on developing and delivering new training on surveillance to support foreign animal disease outbreak response in 2024. Sessions were attended by U.S. regulatory veterinarians and animal health professionals and recordings were made available to the public. |
| Training, Capacity Building (true) | Foot-and-Mouth Disease (FMD) National Disease Spread Model Used for National Functional FMD Exercise | Emergency preparedness and response functional exercises require planning and the inclusion of plausible options to sustain participation and maintain an element of realism for the exercise. CEAH modeling outcomes provide an element of realism for the exercise, which also sustains participation and engagement. |
| Training, Capacity Building (true) | Emergency preparedness and response functional exercises require planning and the inclusion of plausible options to sustain participation and maintain an element of realism for the exercise. CEAH modeling outcomes provide an element of realism for the exercise, which also sustains participation and engagement. | CEAH staff provided subject matter expertise on the United States Disease Outbreak Simulation (USDOS) and United States Animal Movement Models (USAMM) for a USDA–ARS Geospatial Environmental Epidemiology Research Unit planning workshop. The workshop covered ways in which the models are being used, such as exploring the impact of diagnostic testing on FMD outbreaks, developing USDOS to be capable of simulating multi-species (cattle and swine) outbreak scenarios, exploring how decision-making time impacts outbreak outcomes, developing USDOS to simulate bovine tuberculosis (bTB) outbreaks, and evaluating how diagnostics, tracing, and slaughter surveillance impact bTB outbreak outcomes. |
| Training, Capacity Building | | Conducted a pilot project using geospatial methods to validate that Premise Identification Number (PIN) |

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| (true) | Geospatial Pilot Project | coordinates match the swine farm (animal) location for operations across six counties in Iowa and Minnesota. Verified farm locations enhance the United States's ability to respond to disease outbreaks, such as ASF. |
| Training, Capacity Building (true) | Using Artificial Intelligence for Camera Traps to Optimize Animal Production | CEAH is working on the Decision Animal Husbandry: Using Artificial Intelligence for Camera Traps to Optimize Animal Production and Management Decision Support Systems project. The project explores whether artificial intelligence has the potential to save producers and researchers money and time by deploying camera trap arrays for animal monitoring. |
| Training, Capacity Building (true) | New World Screwworm Presentation for the Department of Homeland Security's National Biosurveillance Integration Center (NBIC) Biosurveillance Presentation Series | CEAH staff provided subject matter expertise for review of a presentation on New World screwworm given by the General Director for APHIS Panama-United States Commission for the Eradication and Prevention of Screwworm (COPEG) as part of an NBIC Department of Homeland Security Biosurveillance Presentation Series. |
| Training, Capacity Building (true) | Review of Document: The Foreign Animal Disease Preparedness and Response Plan (FAD PReP)—Disease Response Strategy: Rift Valley Fever (2024) | CEAH staff provided subject matter expertise for discussions on revisions being made to the document "The Foreign Animal Disease Preparedness and Response Plan (FAD PReP)—Disease Response Strategy: Rift Valley Fever (2024)." The plan provides strategic guidance for responding to an animal health emergency caused by Rift Valley fever (RVF) in the United States. |
| Training, Capacity Building (true) | Situation Awareness Update on Tick-borne Diseases of Livestock/Zoonotic Concern | CEAH staff provided subject matter expertise for a National Biosurveillance Integration Center (NBIC) Situation Awareness Update (SAU) regarding tick distributions for tick-borne diseases of livestock/zoonotic concern. |
| Training, Capacity Building (true) | Parallel Efforts in Australia and the United States to Control Invasive Feral Swine | CEAH participated and shared expertise and information on parallel efforts in Australia and the United States to control invasive feral swine. Feral swine, ASF preparedness, and response planning in both countries was discussed. |
| Training, Capacity Building (true) | Society for Vector Ecology Meeting on Wildlife Interactions | CEAH participated in preparing a presentation on "Exotic Tick Records for Florida: A Summary of Opportunistic Reporting." The presentation was given at the Society for Vector Ecology Meeting on Wildlife Interactions in Fort Collins, Colorado, on 18 September 2024. |
| Training, Capacity Building (true) | Southeastern Association of Fish and Wildlife Agencies Conference | CEAH staff presented information on rabies and disease freedom strategies for the Caribbean and the southeastern United States at the Southeastern Association of Fish and Wildlife Agencies Conference in December 2024. |
| | | CEAH staff are participating in the Building Vector |

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| Training, Capacity Building (true) | Building Vector Knowledge in Field Operations (FiOps) | Knowledge in Field Operations project. The project is focused on building vector knowledge among USDA field staff. |
| Training, Capacity Building (true) | Vector and Vector-borne Diseases Strategic Planning | CEAH staff are leading a discussion on vector and vector-borne diseases strategic planning as part of an inter-agency vector working group meeting. The following topics will be included in the strategic plan: Evaluate and Monitor Vector Distributions and Vector-borne Diseases, Epidemiological Investigations, Laboratory Diagnostics and Networks, Information Management and Analyses, Vector Control/Mitigations, and Communication and Outreach Activities. |
| Wildlife (true) | Landscape Connectivity for Invasive Wild Pigs Across the Northern Prairies of North America | CEAH has been working on a project with Canada and USDA Wildlife Services that is looking at the potential landscape connectivity for invasive wild pigs (Sus scrofa) across the northern prairies of North America and potential pathways for invasion into Canada. |
| Wildlife (true) | Feral Swine Rooting Damage and Impact on Cattle Per Acre Grazing Rates | CEAH is participating in a Florida study with the University of Florida Division of Sponsored Research to look at feral swine rooting damage and impact on cattle per acre grazing rates. |
| Wildlife (true) | Support of HPAI in Wildlife Analysis Work | CEAH is supporting HPAI in wildlife analysis work and assisting another USDA units to bolster capabilities as the data has become more complicated and voluminous. |
| Wildlife (true) | Agricultural and Ecological Resources Safeguarded by the Prevention of Wild Pig Population Expansion | CEAH is supporting the Agricultural and Ecological Resources Safeguarded by the Prevention of Wild Pig Population Expansion project. The project found that invasive wild pigs were prevented from spreading to 724 counties, and $40.2 billion in resource value was safeguarded over the first 8 years of USDA's Feral Swine Damage Management Program. |
| Wildlife (true) | Harnessing National Databases to Prevent Disease Outbreaks in Pigs Using Adaptive Risk-based Targeted Surveillance | CEAH staff are leading a project harnessing national databases to prevent disease outbreaks in pigs using adaptive risk-based targeted surveillance. |
| Wildlife (true) | Evidence of Elevated Exposure to Influenza A Viruses in Wild Pigs | CEAH staff are participating in a project looking at evidence of elevated exposure to influenza A viruses (IAVs) in wild pigs in Texas. The study found a high seroprevalence (35%) to IAVs and evidence of exposure to H5 subtype viruses. Seroprevalence for IAVs was highest for animals within 1.5 |

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| | | km to surface water, in animals > 2 years, in females, and in spring relative to fall and winter. |
| Wildlife (true) | SARS-CoV-2 and Influenza A in Wild Mammals | CEAH staff are participating in a community-scale survey of SARS-CoV-2 and influenza A in wild mammals. The project includes surveillance in wild mammal communities across the United States and looks at viral RNA and antibodies to SARS-CoV-2 and influenza A. |
| Wildlife (true) | Feral Swine Density Estimates for Puerto Rico | CEAH subject matter experts developed feral swine density estimates for Puerto Rico for a disease spread model. Data on the known distribution of feral swine on the islands and data on the mean expected number of pigs at a 1km resolution were provided. |
| Wildlife (true) | HPAI in Wild Waterfowl and Live Captured Rodents at the San Diego Zoo Safari Park | CEAH subject matter experts are assisting with a project looking at HPAI in wild waterfowl and in live captured rodents at the San Diego Zoo Safari Park. |
| Wildlife (true) | Evidence for Rabies Virus Exposure in Bats in the U.S. Virgin Islands | CEAH subject matter experts are participating in an Evidence for Rabies Virus Exposure in Bats in the United States Virgin Islands project. |
| Wildlife (true) | Waterfowl Early Warning System | CEAH staff are participating in a project with the U.S. Geological Survey and the University of Massachusetts to develop an early warning system used to inform producers when waterfowl might be in the vicinity. |
| Wildlife (true) | Mycobacterium bovis Transmission Between Wild Pigs and Domestic Cattle During an Outbreak in California | CEAH subject matter experts are contributing to a project looking at risk factors for transmission of Mycobacterium bovis between wild pigs and domestic cattle during an outbreak in California. |
| Avian Diseases (true) | Risk of Introduction and Spread of Novel Avian Influenza Viruses from Eurasia into North America | CEAH staff are participating in a project looking at the risk of introduction and spread of novel avian influenza viruses from Eurasia into North America. Host mobility, viral prevalence, and transmission on a large spatial scale are being looked at. |
| Aquatic Animal Diseases (true) | APHIS Aquaculture Resources Map Application | CEAH maintained a public-facing Aquaculture Resources Map Application that provides links to local and state-level regulatory and disease information. https://www.aphis.usda.gov/aphis/maps/aphis/state-regs-live-aquatic-animals |
| Aquatic Animal Diseases (true) | Infectious Salmon Anemia Virus Killed Vaccine Product and RT- | CEAH provided subject matter expertise on a project looking at infectious salmon anemia virus (ISAV) killed vaccine product and RT-PCR ISAV testing and how a killed |

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| | PCR ISAV Testing | ISAV vaccine product might result in a positive or non-negative PCR test result. |
| Other (true) | Disease Case Definitions Updated | CEAH drafted reportable disease case definitions using a cross-agency subject matter expert panel. These will advance initiatives to promote and expand comprehensive and integrated surveillance for animal diseases in the United States. Case definitions provide the basis for consistent reporting with uniform case findings and reporting criteria. https://www.aphis.usda.gov/livestock-poultry-disease/surveillance/reportable-diseases |
| Other (true) | Rabbit Hemorrhagic Disease (RHD) | CEAH staff maintain the public-facing RHD map application that provides data on domestic and wild RHD cases in the United States. The application shows the current stable endemic area in the U.S. The case data is summarized at the county level and provides valuable information for industry, academics, and other users. Data is updated quarterly. https://www.aphis.usda.gov/aphis/maps/animal-health/rhd |
| Other (true) | Development of Centers for Disease Control's (CDC) Influenza Risk Assessment Tool | CEAH is participating in development of the CDC's Influenza Risk Assessment Tool (IRAT). The IRAT was developed by the CDC Influenza Division as an evaluation tool to assess the potential pandemic risk posed by influenza A viruses that currently circulate in animals but not in humans. |
| Other (true) | Mycoplasma bovis in Bison Task Force | CEAH staff are participating in the Mycoplasma Task Force being organized by the Center of Excellence for Bison Studies at South Dakota University. The Task Force consists of a team of approximately 20 scientists, stewards, managers, veterinarians, and researchers from various sectors, agencies, universities, and stakeholders to collaboratively advance research related to early detection, treatment, and prevention of Mycoplasma bovis in bison. |
| Other (true) | HPAI in Non-lactating Dry Cows and Springing Heifers | CEAH is providing statistical support on an Iowa State University HPAI livestock study testing cattle that were non-lactating (dry cows and springing heifers) at the time of a herd outbreak to determine if they become infected during the outbreak and whether the disease is passed onto calves. |
| Other (true) | Veterinary Services Trade Systems Modernization | CEAH staff are contributing to the Veterinary Services Trade Systems Modernization (VSTSM). This is a multi-year project with an end goal of building a trade-focused IT solution designed to meet VS program and stakeholders' needs to streamline the business processes related to import and export. CEAH staff will serve as subject matter experts for Veterinary Accreditation (NVAP) and interstate |

| | | |
|---|---|---|
| | | certificates of veterinary inspection (CVIs). |
| Other (true) | Oropouche and Dengue Virus in Cuba | CEAH provided subject matter expertise for a weekly interagency meeting the CDC facilitates on Oropouche and Dengue virus in Cuba. |
| Other (true) | Biosecurity Audit Information for the Office of the Inspector General (OIG) | CEAH is providing subject matter expertise for biosecurity audit information that can be used by the OIG in relation to paying (or not paying) indemnity of HPAI-reinfected poultry premises (premises that have been infected 2+ times during the current outbreak). OIG wants to understand the time between restocking and reinfections of the same prem, plus any testing performed during that time. |

# TOR 3: HARMONISATION OF STANDARDS

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main fucus area for which you were designated

| Proposal title | Scope/Content | Applicable Area |
|---|---|---|
| HPAI Routing Tool | CEAH staff continued to update and maintain the HPAI Routing Tool, a web-based secure map application that enables the industry to develop safe routes around restricted zones in place due to the ongoing HPAI outbreak in the United States. | Health Management |
| Risk-based Valuation of Surveillance Data in Open Environments | CEAH staff led development and publication of approaches to evaluate disease freedom in open water environments. Findings demonstrate the ability to retain assurance in pathogen freedom through time in open systems and highlight the importance of sampling frequency for pathogens with higher introduction risk. They also support expert elicitation as a generalizable alternative to formal risk assessment. | Animal Production |

3. In exercising your activities, have you identified any regulatory research needs* relevant for WOAH?

Yes

## Research need 1

**Please type the Research need:** Possible need for research and guidance on HPAI vaccination and associated surveillance requirements. This may be informed by discussions in the Quads HPAI Vaccination and Surveillance Network.

**Relevance for WOAH** Disease Control, Capacity Building, Other, Standard Setting, Animal Welfare, Facilitation of international collaboration,

**Relevance for the Code or Manual** Code, Manual,

**Field** Epidemiology and Surveillance, Diagnostics, Vaccines, Therapeutics,

**Animal Category** Terrestrial, Aquatic,

**Disease:**

**Kind of disease (Zoonosis, Transboundary diseases)** Zoonosis, Transboundary diseases,

**If any, please specify relevance for Codes or Manual, chapter and title**

(e.g. Terrestrial Manual Chapter 2.3.5 - Minimum requirements for aseptic production in vaccine manufacture)

*Answer:*

**Notes:**

*Answer:* Respondent: Jennifer Sinatra, Jennifer.Sinatra@usda.gov

4. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

| Name of WOAH CC/RL/other organisation(s) | Location | Region of networking Centre | Purpose |
|---|---|---|---|
| QUADS Epi – Team Meetings | Virtual | América<br>Asia y el Pacífico<br>Europa | CEAH attended the QUADS Epi-Team collaboration group, which met bimonthly. "Epidemiological Modeling for Policy Development and Evaluation: Best Practice Guidance and Recommendations for Animal Health Related Modeling" presented at the 17th International Symposium on Veterinary Epidemiology and Economics (ISVEE) in Sydney, Australia, 11–15 November 2024. |
| | | | CEAH collaborators from USGS created a website, "Visualizing Avian Influenza" (https://eesc.usgs.gov/aiv/indexus.html), featuring several avian influenza collaborative projects, including preliminary risk interface models that |

| | | | |
|---|---|---|---|
| Collaboration with U.S. Geological Survey | Virtual | América | estimate the risk of avian influenza spillover from wild to domestic bird populations. These models depend on data regarding wild waterfowl distribution, influenza prevalence by waterfowl species, farm locations, and the relative risk of each farm based on size, production method, and poultry species. The modeling output is particularly useful for poultry producers who might increase biosecurity or other preparedness activities to minimize risk of HPAI introductions. |
| Environment and Climate Change Canada | Virtual | América | CEAH staff are supporting a project with Environment and Climate Change Canada, focused on preparedness for neglected, emerging, and re-emerging diseases. |
| GeoZone Pilot Study – Sponsored by Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe) | Virtual | África<br>América<br>Asia y el Pacífico<br>Europa<br>Oriente Medio | CEAH staff completed testing of the GeoZone uploading tool (for global disease zones) for the pilot study that wrapped up in 2024. Feedback was provided to the GeoZone team regarding usability, technical issues, and general recommendations. CEAH staff also completed review of final documents that supported the GeoZone pilot project. The material will be shared with WOAH in 2025, and next steps will be determined. CEAH staff also provided material for a G7 Summit presentation given by the APHIS Liaison to Foreign Agriculture Organization – Animal Health. APHIS was asked to share the Veterinary Services's experience with GeoZone, engagement in the project, and what we have learned. |

# TOR 4 AND 5: NETWORKING AND COLLABORATION

5. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

| | | | |
|---|---|---|---|
| Name of WOAH CC/RL/other | | Region of | |

- -

| organisation(s) | Location | networking Centre | Purpose |
|---|---|---|---|
| HPAI Vaccination Economic Impacts Project – WOAH Collaborating Centre for the Economics of Animal Health- Americas Region | Virtual | Americas | Evaluate the economic impacts of different HPAI vaccination strategies while balancing the epidemiological impacts. |

# TOR 6: EXPERT CONSULTANTS

6. Did your Collaborating Centre place expert consultants at the disposal of WOAH?

Yes

| Name of expert | Kind of consultancy | Subject |
|---|---|---|
| Laura Miles, Jim Lee | Subject matter expert consultation with WOAH World Animal Health Information System (WAHIS) staff | CEAH participated in a feedback session with Canadian representatives, WOAH WAHIS staff, and their contractors, to discuss the new WAHIS reporting system and its implementation. CEAH also provided subject matter expertise on the system's functionality and proposed enhancements to improve the system. We reached out to WOAH WAHIS support on a case-by-case basis when help was needed to ensure accurate reports were submitted through WAHIS. |
| Sherrilyn Wainwright | Subject matter expert liaison between WOAH, FAO | CEAH collaborated with APHIS International Services, Inter-American Institute for Cooperation on Agriculture, Organismo Internacional Regional de Sanidad Agropecuraria (OIRSA), Centro Panamericano de Fiebre Aftosa (PANAFTOSA), WOAH, United Nations Food and Agriculture Organization (FAO), World Health Organization (WHO) and others to identify and describe emerging animal diseases. |
| Lori Gustafson | Subject matter expert | WOAH ad hoc Groups (finfish and mollusc) member on species susceptibility and American Fisheries Society Blue Book Inspection Standards Advisory Panel member. |

# TOR 7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area?

Yes
*CEAH responded to a request from the Federal Research Institute for Animal Health in Germany to discuss a TB test and removal strategy. Germany is facing a large TB outbreak in a dairy herd. This will be the first time Germany would need to complete this process.*

*Additionally, CEAH collaborates with partners from Canadian Food Inspection Agency to discuss HPAI surveillance and response activities to align best practices and strategies for emergency response to HPAI.*

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOAH, to personnel from WOAH Members?

Yes

a) Technical visit : 0

b) Seminars : 1

c) Hands-on training courses: 0

d) Internships (>1 month) : 0

| Type of technical training provided (a, b, c or d) | Content | Country of origin of the expert(s) provided with training | No. participants from the corresponding country |
|---|---|---|---|
| B | Dr. Sarah Mielke presented the completed analysis evaluating probability of regional freedom from FMD Serotype C at the Open Session of European Commission for control of Food and Mouth Disease (EuFMD) meeting in October 2024. | Numerous countries present | 100 |

# TOR 8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOAH?

No

# TOR 9: DATA AND INFORMATION DISSEMINATION

10. Publication and dissemination of any information within the remit of the mandate given by WOAH that may be useful to Members of WOAH

a) Articles published in peer-reviewed journals:

26

*Avery, R.H.*
*Urie, N.J.*
*Branan, M.A.*
*Wiedenheft, A.M.*
*Dennis, E.*
*Marshall, K.L.*

*Burke, J.M.*
*Miller, J.E. A national survey of the gastrointestinal nematode control practices used by goat producers in the United States Veterinary Parasitology*

*Hempstead, S.C.*
*Gensler, C.A.*
*Haley, C.A.*
*Wiedenheft, A.M.*
*Robertson, J.B.*
*Fedorka-Cray, P.J.*
*Jacob, M.E. Prevalence and Characterization of Salmonella Species on U.S. Swine Sites as Part of the NAHMS 2021 Swine Enteric Study Journal of Food Protection*

*Gensler, C.A.*
*Hempstead, S.C.*
*Keelara, S.*
*Fedorka-Cray, P.J.*
*Urie, N.J.*
*Wiedenheft, A.M.*
*Stuart, K.*
*Marshall, K.L.*
*Jacob, M.E. Antimicrobial Resistance Characteristics of Fecal Escherichia coli and Enterococcus Species in U.S. Goats: 2019 National Animal Health Monitoring System Enteric Study Foodborne Pathogens and Diseases*

*Brown, V.R.*
*Miller, R.S.*
*Pepin, K.M.*
*Carlisle, K.M.*
*Cook, M.A.*
*Vanicek, C.F.*
*Holmstrom, L.K.*
*Rochette, L.T.*
*Smyser, T.J.African swine fever at the wildlife-livestock interface: challenges for management and outbreak response within invasive wild pigs in the United States Frontiers in Veterinary Science*

*Chalkowski, K.*
*Pepin, K.M.*
*Lavelle, M.J.*
*Miller, R.S.*
*Fischer, J.W.*
*Brown, V.R.*
*Glow, M.P.*
*Smith, B.*
*Cook, S.*
*Kohen, K.*
*Sherburne, S.*
*Smith, H.*
*Leland, B.R.*
*VerCauteren, K.C.*

*Snow, N.P. Operational lessons learned from simulating an elimination response to a transboundary animal disease in wild animals bioRxiv (Cold Spring Harbor Laboratory)*

*Chung, C.J.*
*Remmenga, M.D.*
*Mielke, S.R.*
*Branan, M.*
*Mihalca, A.D.*
*Balmos, O.*
*Oglan, D.a.B.*
*Supeanu, A.*
*Farkas, A. Evaluation of Aggregate Oral Fluids for African Swine Fever Real–Time PCR Diagnostics Using Samples Collected on Romanian Farms with an Active Outbreak Transboundary and Emerging Diseases*

*Gamble, H.R.*
*Hill, D.E.*
*Fournet, V.*
*Adams, B.*
*Hawkins-Cooper, D.*
*Fredericks, J.*
*Aquino, J.*
*Agu, S.*
*Chehab, N.*
*Ankrah, A.*
*Antognoli, M.C.*
*Remmenga, M.D.*
*Kramer, S.*
*Gustafson, L.*
*Rosenthal, B.M. Surveillance for Trichinella infection in U.S. pigs raised under controlled management documents negligible risk for public health Food and Waterborne Parasitology*

*Gensler, C.A.*
*Hempstead, S.C.*
*Keelara, S.*
*Fedorka-Cray, P.J.*
*Urie, N.J.*
*Wiedenheft, A.M.*
*Marshall, K.L.*
*Branan, M.*
*Stuart, K.*
*Lantz, K.*
*Jacob, M.E. Prevalence, Antimicrobial Resistance, and Diversity of Campylobacter Isolated from U.S. Goat Feces: 2019 NAHMS Survey Foodborne Pathogens and Disease*

*Li, X.*
*Parker, B.M.*
*Boughton, R.K.*
*Beasley, J.C.*
*Smyser, T.J.*

*Austin, J.D.*
*Pepin, K.M.*
*Miller, R.S. Vercauteren, K.C.*
*Wisely, S.M. Torque Teno SUS Virus 1: A potential surrogate pathogen to study Pig-Transmitted transboundary animal diseases Viruses*

*Miller, H.K.*
*Branan, M.*
*Priestley, R.A.*
*Álvarez-Alonso, R.*
*Cherry, C.*
*Smith, C.*
*Urie, N.J.*
*Wiedenheft, A.*
*Bliss, C.*
*Marshall, K.*
*Kersh, G.J. Coxiella burnetii in domestic doe goats in the United States, 2019–2020 Frontiers in Veterinary Science*

*Pietrak, M.*
*Warg, J.*
*Gustafson, L.*
*Peterson, B.C. Intermittent detections of ISAV-HPR0 in a salmon recirculating aquaculture system, and implications for sampling Fishes*
*Prosser, D.J.*
*Kent, C.M.*
*Sullivan, J.D.*
*Patyk, K.A.*
*McCool, M.*
*Torchetti, M.K.*
*Lantz, K.*
*Mullinax, J.M. Using an adaptive modeling framework to identify avian influenza spillover risk at the wild-domestic interface Scientific Reports*

*Snow, N.P.*
*Smith, B.*
*Lavelle, M.J.*
*Glow, M.P.*
*Chalkowski, K.*
*Leland, B.R.*
*Sherburne, S.*
*Fischer, J.W.*
*Kohen, K.J.*
*Cook, S.M.*
*Smith, H.*
*VerCauteren, K.C.*
*Miller, R.S.*
*Pepin, K.M. Comparing efficiencies of population control methods for responding to introductions of transboundary animal diseases in wild pigs Preventive Veterinary Medicine*

*Tarasiuk, G.*
*Remmenga, M.D.*

*O'Hara, K.C.*
*Talbert, M.K.*
*Rotolo, M.L.*
*Zaabel, P.*
*Zhang, D.*
*Giménez-Lirola, L.G.*
*Zimmerman, J.J. Pen-Based Swine Oral Fluid Samples Contain Both Environmental and Pig-Derived Targets Animals*

*Welch, J.L.*
*Branan, M.*
*Urie, N.*
*Shrestha, R.*
*Wiedenheft, A.*
*Marshall, K.*
*Robbe-Austerman, S.*
*Shanmuganatham, K.K. Coxiella burnetii seroprevalence in domestic goat does in the United States: Prevalence, distribution, and associated risk factors Preventive Veterinary Medicine*

*Zlotnick, M.*
*Eisenstein, T.*
*Robyn, M. P.*
*Marshall, K.E. Foodborne disease outbreaks linked to foods eligible for irradiation, United States, 2009–2020 Emerging Infectious Diseases*

*Cardenas, N.C.*
*Valencio, A.*
*Sanchez, F.*
*O'Hara, K.C.*
*Machado, G. Analyzing the intrastate and interstate swine movement network in the United States Preventive Veterinary Medicine*

*Canino, N.*
*Torhorst, C.*
*Botero-Cañola, S.*
*Beati, L.*
*O'Hara, K.C.*
*James, A.*
*Wisely, S.M. Development of a rapid and reliable surveillance method for Ornithodoros turicata americanus in gopher tortoise (Gopherus polyphemus) burrows in the southeastern United States Medical and Veterinary Entomology*

*Gustafson, L.*
*Remmenga, M.*
*Duncan, C.*
*Bliss, C.*
*Bushek, D.*
*Carnegie, R.B.*
*Giray, C.*
*Meyers, T.*
*Davis, K.*
*Hartman, K.*
*Elston, R. Risk-based valuation of surveillance data in open environments: Methods application to a key shellfish aquaculture production*

*region Journal of the World Aquaculture Society*

*Botero-Cañola, S.*
*Torhorst, C.*
*Canino, N.*
*Beati, L.*
*O'Hara, K.C.*
*James, A.M.*
*Wisely, S.M. Integrating Systematic Surveys with Historical Data to Model the Distribution of Ornithodoros turicata americanus, a Vector of Epidemiological Concern in North America Ecology and Evolution*

*Kessinger, P.*
*James, A.M.*
*Patyk, K.*
*Magzamen, S. A habitat suitability analysis for three Culicoides species implicated in bluetongue virus transmission in the southeastern United States ISEE Conference Abstracts*

*Ssematimba, A.*
*Malladi, S.*
*Bonney, P.J.*
*St Charles, K.M.*
*Hutchinson, H.C.*
*Schoenbaum, M.*
*Marusak, R.*
*Culhane, M.R.*
*Cardona, C.J. Estimating adequate contact rates and time of highly pathogenic avian influenza virus introduction into individual United States commercial poultry flocks during the 2022/24 epizootic bioRxiv (Cold Spring Harbor Laboratory)*

*Walker, H.L.*
*Miller, R.S.*
*Pomeroy, L.W.*
*Arruda, A.G. Characterizing risk factors for infection of Mycobacterium bovis between wild pigs and domestic cattle from an outbreak response — California, 1961–1967 Preventive Veterinary Medicine*

*Jareb, C.*
*Pepin, K.M.*
*Miller, R.S.*
*Sykora, S.*
*Shwiff, S.A.*
*McKee, S.C. Agricultural and ecological resources safeguarded by the prevention of wild pig population expansion Biology*

*Kramer, C.J.*
*Boudreau, M.R.*
*Powers, R.*
*VerCauteren, K.C.*
*Miller, R.S.*
*Brook, R.K. Potential landscape connectivity for invasive wild pigs (Sus scrofa) across the northern prairies of North America Biological Invasions*
*Bonney, P.J.*

*Malladi, S.*
*Ssematimba, A.*
*O'Hara, K.C.*
*Remmenga, M.D.*
*Farr, M.*
*Leonard, M.*
*Alexander, C.Y.*
*Blair, B.*
*Martin, S.W.*
*Culhane, M.R.*
*Corzo, C.A. Simulation of Premovement Active Surveillance Protocols for Moving Finishing Pigs to a Harvest Facility from a Control Area during an Outbreak of African Swine Fever in the United States Transboundary and Emerging Diseases*

b) International conferences:
1
*Presentations on "Investigation of risk factors for introduction of highly pathogenic avian influenza H5N1 virus onto table egg farms in the United States, 2022" and "Epidemiological Modeling for Policy Development and Evaluation: Best Practice Guidance and Recommendations for Animal Health Related Modeling" at the 17th International Symposium on Veterinary Epidemiology and Economics (ISVEE) in Sydney, Australia – November 2024*

c) National conferences:
6
*Updates from the NAHMS Sheep 2024 study related to study planning and data collection were presented at the American Sheep Industry Convention, Denver, Colorado – January 2024*

*Results of the NAHMS Feedlot 2021 study focused on biosecurity, diseases, and various management practices was presented at the Academy of Veterinary Consultants meeting, Denver, Colorado – August 2024*

*Presented "Exotic Tick Records for Florida: A Summary of Opportunistic Reporting" at the Society for Vector Ecology Meeting in Fort Collins, Colorado – September 2024*

*Presentations on African swine fever at the CEAH ASF Symposium, Fort Collins, Colorado – September 2024*

*Updates on the NAHMS Sheep 2024 data collection, the NAHMS 2024 Backyard Animal Keeping study, and study design for the NAHMS Equine 2026 study were presented at the United States Animal Health Association (USAHA), Nashville, Tennessee – October 2024*

*Presented information on rabies and disease freedom strategies for the Caribbean and the southeastern United States at the Southeastern Association of Fish and Wildlife Agencies (SEAFWA) Conference, Augusta, Georgia – December 2024*

d) Other (Provide website address or link to appropriate information):
3
*USDA. 2024. "Biosecurity on U.S. Swine Operations (Small Enterprise) NAHMS Swine 2021 Study" USDA-APHIS-VS-CEAH-NAHMS. Fort Collins, CO. Biosecurity on U.S. Small Swine Operations: NAHMS Swine 2021 Study*

*USDA. 2024. "Biosecurity on U.S. Swine Operations (Large Enterprise) NAHMS Swine 2021 Study" USDA-APHIS-VS-CEAH-NAHMS Fort Collins, CO. Biosecurity on U.S. Large Swine Operations; NAHMS Swine 2021 Study*

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*USDA. 2024 "NAHMS Equine Needs Assessment: An Evaluation of Owner and Industry Concerns to Help Guide Future NAHMS Studies". USDA-APHIS-VS-CEAH-NAHMS, Fort Collins, CO. NAHMS Equine Needs Assessment: An Evaluation of Owner and Industry Concerns to Help Guide Future NAHMS Studies*

11. What have you done in the past year to advance your area of focus, e.g. updated technology?
*CEAH supported a project to develop an app that will allow comparative cervical tuberculosis tests performed by students in a tuberculosis training to be posted in a graphic format on a screen in real time during the training. The app is currently being pilot tested.*

*CEAH supported external data sharing of restricted use national study data by hosting virtual and physical workstations to support access by researchers and developed prototype metadata files for a searchable data catalog.*

*CEAH improved data quality and data collection efficiency through the implementation of electronic data capture for national surveys.*

12. Additional comments regarding your report:
*No further comments to add.*