

## Centers for Epidemiology and Animal Health

# Center for Animal Health Information and Analysis

**Fiscal Year 2010  
Annual Report**



Emerging Issues Identification



Analysis Projects



Disease Spread & Impact Modelling



Services



Training

## LETTER FROM THE DIRECTOR



We are pleased to present the FY10 Annual Report of the Center for Animal Health Information and Analysis (CAHIA). This represents the second annual report of CAHIA's accomplishments.

As you will note in the following report, I am fortunate to work with a highly talented and dedicated staff that provides scientifically rigorous analyses of tremendous value to VS and APHIS. We identify risk factors and potential mitigations to inform development of animal disease control and eradication programs. We use risk assessment to ensure business continuity and facilitate emergency response during highly contagious disease outbreaks. We provide high quality cartographic services and spatial analyses to inform program decisions. We use components of risk analysis and the methods and tools required to meet the needs of a diverse set of customers.

As experienced and talented as CAHIA staff is, we cannot do this work alone. Noted throughout the report are partnerships and collaborations with others within APHIS, as well as other Agencies and non-governmental entities. We truly appreciate and value those partnerships and the opportunity they provide to improve our work and build lasting relationships. Through these efforts, we inform VS regulatory decisions and operations, and ensure that APHIS effectively safeguards U.S. animal health.

We welcome your feedback on our accomplishments, and on the report, and look forward to the activities and challenges of the year ahead!

Sincerely,

A handwritten signature in black ink, appearing to read "Tracey V. Lynn". The signature is fluid and cursive, with a large initial "T" and "L".

Tracey V. Lynn, DVM, MS, DACVPM  
Director, CAHIA-National Center for Risk Analysis

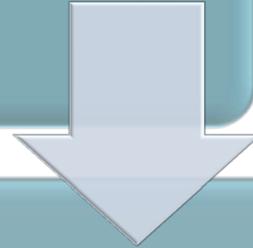
# CONTENTS

**Letter from the Director**

- Overview ..... 1**
  - Organizational Structure ..... 1
  - Team Activities and Expertise..... 2
  - Staff Organizational Chart..... 3
  - Core Functions and Project Areas ..... 4
  - CAHIA FY10 Risk Analysis Map ..... 5
- Major Accomplishments for FY10 by Core Function ..... 6**
  - Emerging Issues Identification ..... 6
    - Student Projects ..... 6
  - Analysis Projects..... 7
    - Appraisal-Indemnity-Compensation Analysis Projects..... 7
    - Student Projects ..... 7
  - Disease Spread and Impact Modeling ..... 8
  - Services ..... 9
    - Appraisal-Indemnity-Compensation Service Activities ..... 10
  - Training ..... 11
- Major Projects Completed in FY10 by Core Function ..... 12**
  - Emerging Issues Identification ..... 12
    - Student Projects ..... 19
  - Analysis Projects..... 19
    - Student Projects ..... 22
  - Disease Spread and Impact Modeling ..... 22
  - Services ..... 22
  - Training ..... 23
- Major Milestones Completed in FY10 for Long-Term Projects..... 25**
  - Analysis Projects..... 25
  - Disease Spread and Impact Modeling ..... 25
  - Training ..... 26
- Presentations and Posters..... 27**
- Collaborations ..... 31**
  - Emerging Disease Surveillance Collaborations ..... 31
  - Animal/Livestock Movement and Wildlife Interaction Collaborations ..... 31
  - Federal/State/Industry Disease Eradication Collaborations ..... 32
- Committees, Advisory Boards, and Working Groups ..... 33**
- Articles Submitted, Accepted, and Published ..... 34**
  - Submitted ..... 34
  - Accepted ..... 34
  - Published ..... 35
- CAHIA Values and Guiding Principles ..... 36**
  - Diversity..... 36
  - Communications ..... 36
  - Respect ..... 36
  - Accountability ..... 36
  - Collaboration and Teamwork ..... 37

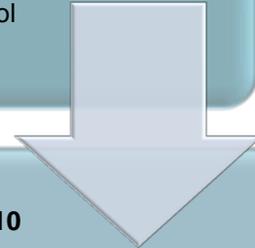
### USDA Strategic Goals

- ❖ Assist rural communities to create prosperity so they are self-sustaining, repopulating, and economically thriving.
- ❖ Ensure our national forests and private working lands are conserved, restored, and more resilient to climate change while enhancing our water resources.
- ❖ Help America promote sustainable agricultural production and biotechnology exports as America works to increase food security.
- ❖ Ensure that all of America's children have access to safe, nutritious, and balanced meals.



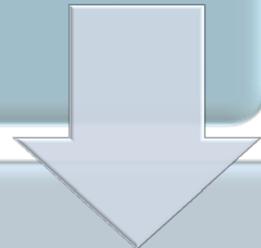
### VS Priorities for FY10

- ❖ Modernize the TB and Brucellosis programs.
- ❖ Implement emerging disease surveillance.
- ❖ Implement comprehensive and integrated swine surveillance.
- ❖ Enhance emergency and outbreak response activities.
- ❖ Implement an animal traceability system to improve disease control and response activities.



### CEAH Strategic Priorities for FY10

- ❖ Refine the Epidemiologic Outbreak Investigation role for CEAH and VS to improve identification of risk factors and mitigations.
- ❖ Define the role of CEAH in strategic planning, options analysis, and program evaluation.
- ❖ Define CEAH's role in One Health for the Agency
- ❖ Strengthen the value of international collaborations to meet VS and U.S. priorities for safeguarding animal health.
- ❖ Develop international standards and collaborate with OIE and other organizations to contribute to broader U.S. foreign policy initiatives.



### CAHIA FY10 Priorities

- ❖ Enhance Emerging Disease Surveillance, particularly domestically.
- ❖ Assess risks for program diseases (TB, Brucellosis, etc.), biosecurity planning (Guam), and business continuity planning purposes.
- ❖ Provide training and services, including cartography, appraisal/indemnity calculations, and expert consultations.
- ❖ Expand collaborative relationships within VS.
- ❖ Improve internal business operations.

## OVERVIEW

We are pleased to present the FY10 Annual Report of the Center for Animal Health Information and Analysis (CAHIA).

Fiscal Year 2010 represented a year of great challenges and great accomplishments for the Center for Animal Health Information and Analysis. CAHIA, originally named the Center for Emerging Issues, was formed in the early 1990's to address emerging animal health issues such as bovine spongiform encephalopathy (BSE). Early projects included qualitative and quantitative risk analysis studies about BSE, and evaluation of issues and ramifications of *E. coli* O157:H7, and an analysis of the changing epidemiology and emerging risk factors associated with transmission of bovine tuberculosis.

In October 2007, CEI acquired a team of risk analysts. That merger marked the beginning of several years of transition designed to sharpen our focus on risk identification and risk analysis, including our work during FY10 to define our role as an OIE (World Organization for Animal Health) collaborating center for risk analysis, culminating in our self-identification as the National Center for Risk Analysis (NCRA).

### Vision

- CAHIA is a premier authority on risk analysis, globally recognized for their work in methods and standards development to protect both animal and human health.

### Mission

- CAHIA helps APHIS and VS protect U.S. animal health by analyzing risks to animal health and agricultural markets from domestic and international sources.

CAHIA supports the mission of APHIS and VS to protect U.S. animal health by identifying, evaluating, and analyzing risk and risk factors to strengthen capacity for global animal disease prevention, detection, and response.

CAHIA fulfills its mission through a multidisciplinary approach, carried out by an experienced staff that includes analysts, biologists, economists, epidemiologists, statisticians, and veterinarians. In addition, CAHIA collaborates with other units within USDA:APHIS:VS and CEAH, as well as other agencies

and partners external to APHIS. Among these are the Department of Homeland Security (DHS) and the National Center for Medical Intelligence (NCMI).

## Organizational Structure

CAHIA supports VS regulatory decisions and operations by conducting time-critical risk, epidemiologic, and economic analyses.

The **Global Intelligence and Forecasting (GIF)** team focuses on the early identification, analysis, and communication of animal diseases and threats to U.S. agriculture.

The **Risk Analysis Team (RAT)** is responsible for the identification, application, and development of epidemiologic and economic methods and approaches for estimating risks and consequences of animal disease outbreaks, and assists disease control programs in measuring impacts of program and policy changes to animal health, consumers, and producers.

The **Spatial Epidemiology Team (SET)** focuses on describing and understanding spatial variation in disease risk, particularly at the small-area level. The SET provides expertise to VS in the use of geospatial methods including collection and use of geospatial data, provision of cartographic services, use of remote sensing applications, and the use of spatial analysis to inform risk analysis.

## Team Activities and Expertise

### Global Intelligence and Forecasting (GIF)

- All-source intelligence, early hazard identification, and initial impact analysis;
- Emerging disease analysis, methods, and tool development;
- Trend analysis of emerging diseases and issues;
- Forecasting and scenario planning; and
- Business tool development.

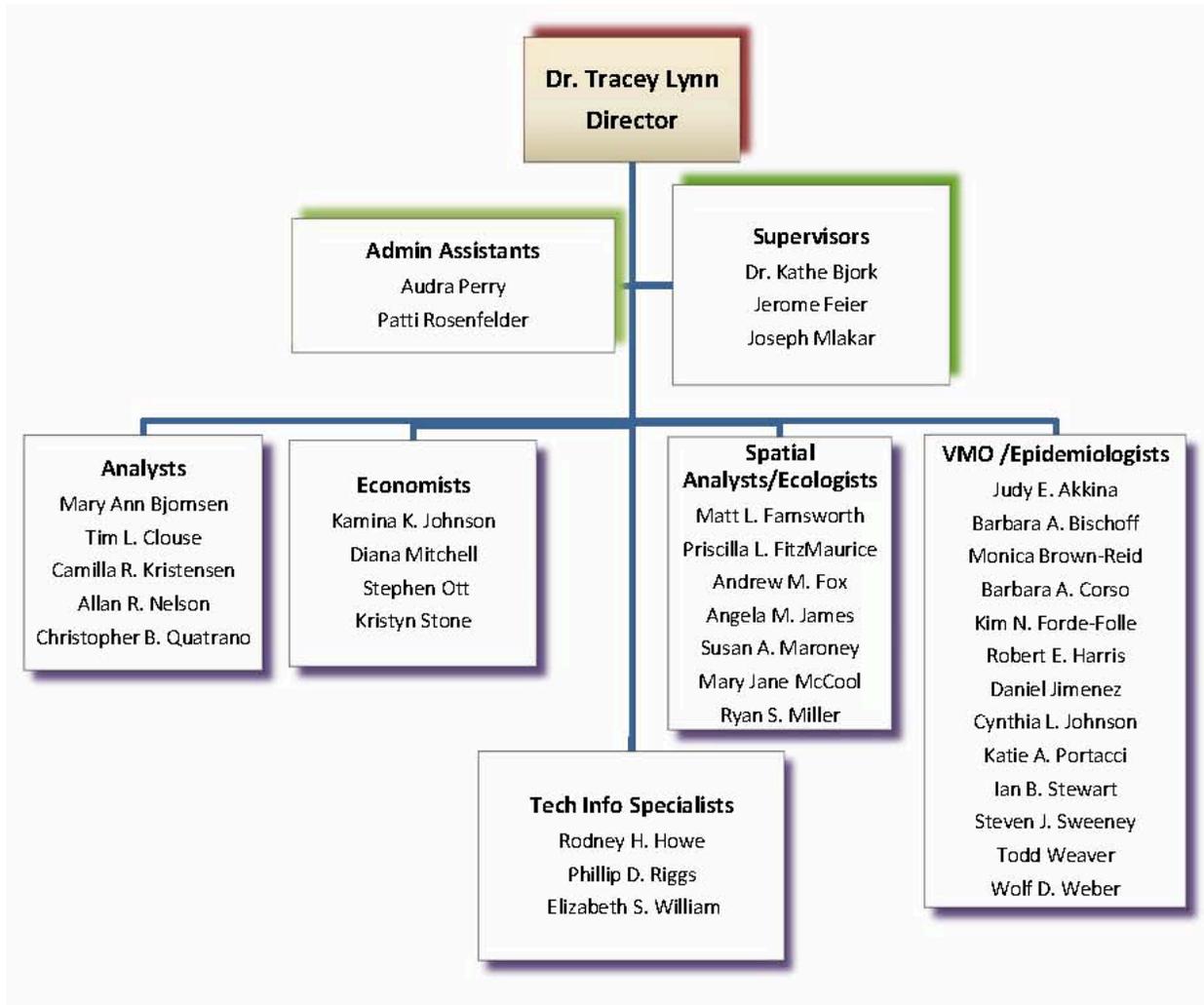
### Risk Analysis Team (RAT)

- Qualitative and quantitative risk assessments and mitigation analyses;
- Risk communication;
- Apply regionalization and proactive risk assessment concepts to domestic disease control efforts;
- Epidemiologic and economic modeling to inform and enhance emergency preparedness and response;
- Consequence assessment (including compensation and indemnity) and cost-benefit analyses;
- Develop new methods for applying available data to assess risks important to VS programs; and
- Contribute to CEAH’s activities as a World Organization for Animal Health (OIE) collaborating center for surveillance, risk analysis, and animal disease spread modeling.

### Spatial Epidemiology Team (SET)

- Disease mapping within a population and the spatial or spatio-temporal variations in disease risk;
- Relationship studies between disease distribution, ecological factors, and animal management practices;
- Identification and assessment of spatial and environmental risk factors on the occurrence and spread of disease within animal;
- Spatial statistical analysis on geostatistical data, lattice grid data, and spatial point patterns;
- Cluster detection and evaluation on spatial and spatio-temporal clusters to determine the relationship (e.g., hot spots and cold spots) of events occurring in close proximity; and
- Predictive spatial modeling using multi-factorial data, parameter-based data, often from empirical processes with a hierarchical organization, to create a probability estimate of where a new disease event might occur.

### Staff Organizational Chart



**Contractors:** Daniel Jimenez, Kristen Johnson, Sasidhr Malladi, Gayle Miller, Saraya Tavorpanich  
**Auburn University Student:** J. Camille Effler  
**Colorado State University Students:** Lauren M. Abrahamsen, Jenna L. Bagnall, Raquel Batista, Kaydee Cavender, Emily E. Devlin, J. Camille Effler, Janel Funk, Gabriel B. Kalousek, Brian Kraus, Jennifer Malmberg, Kelly Patyk, Shae Thomas  
**Colorado State University (via University of Minnesota CA) Students:** Christina G. Der, Alexis R. Freifeld, Janel Funk, Julie Pease

Extern	CAHIA Mentor
Kellie M. Littrell, Texas A&M	K. Portacci
Cedric V. Lane, Tuskegee University	R. Johnson
Jeremy L. Lewis, Western College of Vet Med	J. Mlakar
Brittany E. King, University of Edinburgh, Scotland	J. Freier
Laura N. Kotinsley, University of Florida	R. Johnson
Meredith Swart, University of Florida	J. Akkina
Melissa K. Johnson, University of Georgia	K. Portacci
Giordana S. Costa, University of Minnesota	J. Freier
Grace M. Hale, University of Oklahoma	T. Clouse

Overview

## Core Functions and Project Areas

### 1. **Emerging Issues (Risk) Identification.**

CAHIA conducts research and analysis of available data to identify, at the earliest possible occasion, emerging animal diseases or agriculture issues that have the potential to significantly impact the United States. CAHIA develops analytical products to communicate our knowledge of these emerging issues, the risk to the United States, and the potential impacts. CAHIA's work in this area provides critical information to Agency and industry decision makers and keeps interested members of the public informed.

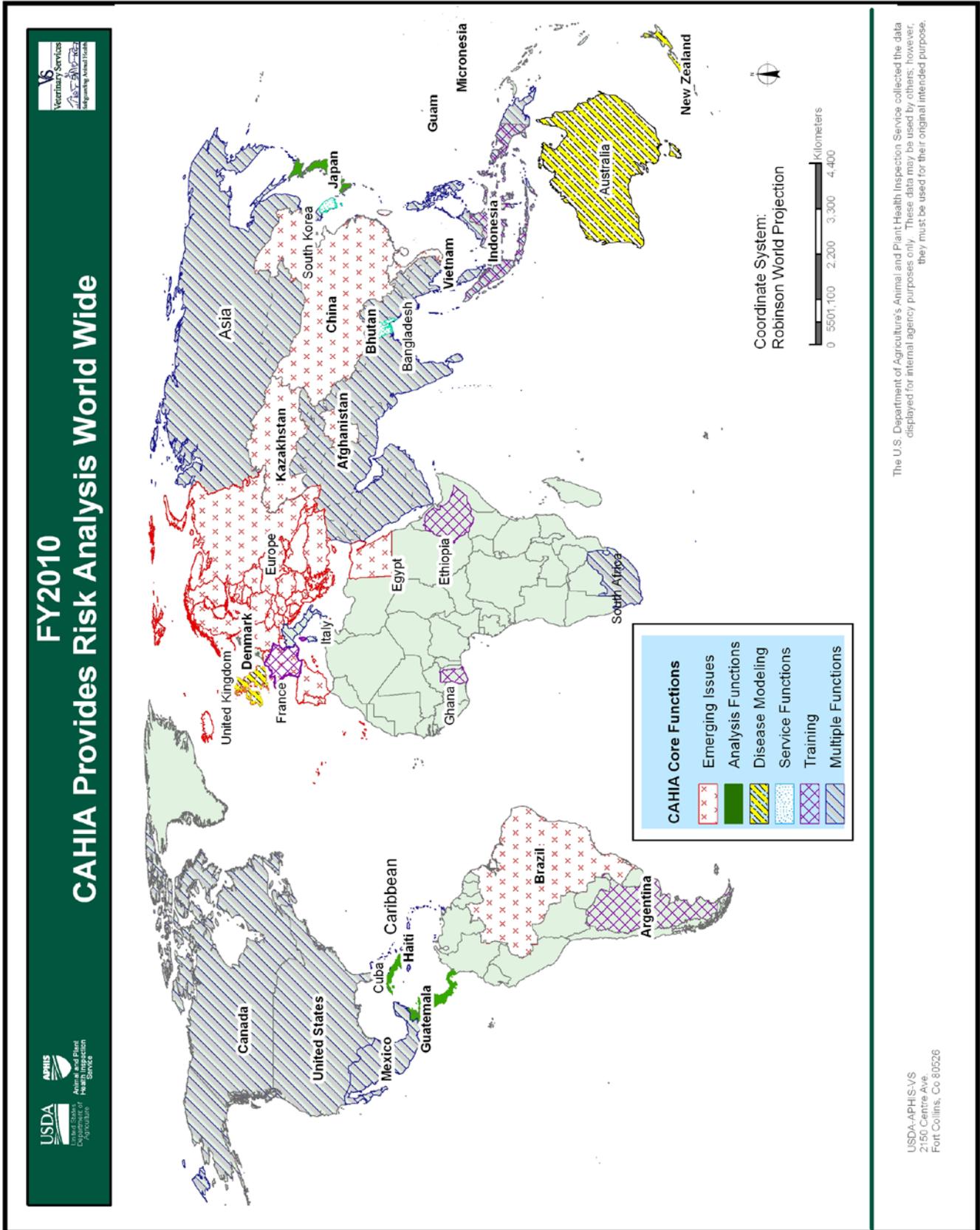
2. **Analysis Projects.** CAHIA analyzes the risk of introduction and the potential impacts of particular animal diseases to specific geographic areas of concern. CAHIA also conducts analyses that improve understanding of the distribution of disease and the spatial factors that influence the introduction, spread, and biologic maintenance of disease.

3. **Disease Simulation and Impact Modeling.** CAHIA serves on the North American Animal Disease Spread Model (NAADSM) development team. NAADSM is a stochastic model that simulates the spread of animal disease. CAHIA analysts assist with conceptual development and operational testing of the model and conduct analysis projects using NAADSM. CAHIA analysts work in collaboration with an economic modeler from the National Animal Health Monitoring system (NAHMS) to assess the economic impacts of disease outbreaks in conjunction with NAADSM modeling.



4. **Services:** CAHIA contributes services and support functions for VS. Compensation and appraisal information, including indemnity calculators, are provided for disease control programs. The National Tick Survey supplies information on the geographic distribution of tick species in the U.S. Additionally, CAHIA provides the Online Map Service (OLMS), expanding accessibility and streamlining the process for VS staff to obtain professional cartographic products. Map products generated through the National Tick Survey and OLMS are available through the VS link to the Inside APHIS Web page at <http://inside.aphis.usda.gov/vs/>.
5. **Training.** CAHIA conducts specialized spatial analysis and risk analysis training for program managers, analytical epidemiologists, wildlife ecologists, surveillance specialists, and disease spread modelers. A variety of courses are offered each year that are available to all VS employees and stakeholders. In addition to local and national training seminars, CAHIA also offers specialized training throughout the world.

# CAHIA FY10 Risk Analysis Map



The U.S. Department of Agriculture's Animal and Plant Health Inspection Service collected the data displayed for internal agency purposes only. These data may be used by others; however, they must be used for their original intended purpose.

USDA-APHIS:VS  
2150 Centre Ave.  
Fort Collins, Co 80526

Overview

## MAJOR ACCOMPLISHMENTS FOR FY10 BY CORE FUNCTION



### Emerging Issues Identification

#### Emerging Issues Identification

1. All-Source Scanning for Biosecurity Threats, Animal Health Threats, and Animal Agriculture Issues
2. An Animal Health Alert System Based on Argus Animal Health Event Data: Proof of Concept
3. An Animal Health Monitoring System Based on Slaughter Condemnation Data
4. Assessment of Veterinary Infrastructure in Kazakhstan
5. CAHIA Animal Health Alerts and Advisories
6. CAHIA Animal Health Tracks
7. CAHIA Response to International Services Regarding Tasks Related to the National Strategy for Countering Biological Threats
8. Descriptive Analysis of Wild Bird Imports to the United States 2004-2008
9. Descriptive Analysis of Wild Mammal Imports to the United States 2004-2008
10. Descriptive Analysis of Wild Reptile Imports to the United States 2004-2008
11. Emerging Disease Notice: Bleeding Calf Syndrome
12. Emerging Disease Surveillance Plan
13. Equine Issues Workshop
14. Global Intelligence and Forecasting Team Strategic Plan 2010-2011
15. National Risk Analysis for Transmission of Avian Influenzas to Poultry submitted to National Center for Animal Health & Emergency Management (NCAHEM)
16. Infectious Disease Alert: Potential Re-introduction of Screwworm to the United States
17. Intelligence on Drug Cartel Violence at Texas/Mexico Border
18. Intelligence Product: Defense Intelligence Summary on Afghanistan
19. Intelligence Product: Threat of an Accidental Introduction of Wheat Stem Rust, UG99 into the United States
20. Issue Paper: Future Farm Trends Affecting Animal Agriculture
21. Issue Paper: Potential Risks from Increased U.S. Bison Imports from Canada, 2004-2008
22. Launched the updates and enhancements of the Farm Location and Animal Population Simulator (FLAPS)
23. Memorandum: Issues Resulting from U.S. Legislation on Horse Slaughter and Horse Transportation
24. Summary and Analysis of Recent FMD Outbreaks in Asia
25. Veterinary Health Systems Database
26. Worldwide Influenza Surveillance: H1N1
27. Worldwide Influenza Surveillance: H5N1

#### Student Projects

28. Q Fever: An Emerging Disease in the Netherlands.  
[http://webdev.aphis.usda.gov/animal\\_health/emergingissues/downloads/pr\\_qfeveremergdnotice.pdf](http://webdev.aphis.usda.gov/animal_health/emergingissues/downloads/pr_qfeveremergdnotice.pdf)



## Analysis Projects

### Analysis Projects

1. Risks to livestock and poultry associated with the U.S. military buildup in the Micronesian Region.
2. Briefing paper: HR 1549--Preservation of Antibiotics for Medical Treatment Act of 2009 delivered to CEAH Center Director.
3. Canadian Animal Import Quarantine Process reviewed and economic impact of livestock quarantine in three States (Indiana, Michigan, Ohio) analyzed for COOP exercise.
4. Cost evaluation for the equine piroplasmosis program including disease surveillance, tracing, and control activities.
5. Draft risk assessment initiated for Secure Milk Supply Plan.
6. Economic impact evaluated for additional testing requirements for brucellosis in cattle imported from Canada.
7. Map products and text completed for Global Perspective of Equine Piroplasmosis paper.
8. Interstate Certificates of Veterinary Inspection collected from 49 of 50 states to support projects in animal disease traceability.
9. National Risk Assessment for Spread of H5N1 HPAI by Migratory Waterfowl completed.
10. "North American Livestock Trade Flows" paper jointly authored by CAHIA economists and Livestock Marketing Information Center (LMIC).
11. Outcome data analyzed from Offshore Pest Information Program.
12. Proactive risk assessments completed for shell eggs, nest run eggs, and hatching eggs: <http://secureeggssupply.com/>.
13. Proactive risk assessment draft for FMD in ready-to-eat pork completed.
14. Remote sensing methods developed for automated detection of commercial poultry operations in northern Arkansas.
15. Report on the economic impacts of H1N1 completed for NAHMS Animal Health Status document.
16. Risk assessment for the introduction of New World Screwworm into the U.S., Mexico, and Central America from the Caribbean completed.
17. Risk assessment for the introduction of disease into U.S. poultry from imported commercial shipments of exotic birds in transiting U.S. airports en route to quarantine completed.
18. Risk rankings assigned to foreign countries for use by Customs and Border Protection when targeting passenger baggage.
19. VS Secure Egg Supply (SES) Plan developed and reviewed with NCAHEM.
20. Updates and enhancements of the Farm Location and Animal Population Simulator (FLAPS) launched.

### Appraisal-Indemnity-Compensation Analysis Projects

21. Cadre of Qualified Private Appraisers developed.
22. Method for inputting missing prices in AMS Monthly Sheep Report developed to provide prices for the scrapie calculator.
23. Dairy and beef cow-cull prices analyzed.
24. Dairy appraisal calculator revised.
25. Beef cow-calf appraisal calculator developed (in cooperation with Livestock Marketing Information Center [LMIC]).
26. Beef feeder cattle appraisal calculator developed (in cooperation with LMIC).
27. Generic appraisal calculator developed for meat animals.
28. Alternative compensation plans developed for bovine TB.

### Student Projects

29. Analysis: Japanese Encephalitis: Background and Potential Threat to the United States.
30. A State-by-State Assessment of the Risk of Introduction of CSF into Domestic Swine herds in the United States.



## Disease Spread & Impact Modelling

### Disease Spread and Impact Modeling

1. Brucellosis Management Area Model developed for the Western Region and Ruminant Health Program Staff to evaluate designated surveillance areas associated with *Brucella abortus* spread to cattle.
2. CAHIA chaired the QUADS EpiTeam in 2010, which is a subgroup of the QUADS Emergency Management Working Group, formed to strengthen collaboration in areas of epidemiology and modeling.
3. CAHIA hosted a symposium and workshop on livestock compensation at CEAH for VS management and program staff.
4. Data quality review and county level distribution maps for the American dog tick completed for the National Tick Survey.
5. Phase 1 of FAO-CEAH Collaborative Project on HPAI H5N1 completed using the Global Outbreak Database (EMPRES-i).
6. Preliminary maximum entropy methods development completed to model the suitable habitat and potential spatial distribution of the American Dog Tick and the Rocky Mountain Wood tick in the United States.
7. CEAH funded Lawrence Livermore National Lab project reviewed on the use of NASS data to develop model predicting farm locations across the United States.
8. Spatial analysis methods compared for the distribution of the Rocky Mountain wood tick in the United States.
9. Spatial and Temporal Relationships of *Mycobacterium bovis* in animals of the United States analyzed to improve understanding of risk for emergence and improved program decisions.
10. Veterinary Services network modeling projects presented to international disease modeling experts as part of a workshop titled “Recent Approaches in Modeling Animal Infectious Diseases” held in Teramo, Italy.
11. Working group established to develop network model of cattle movements and bovine tuberculosis in the United States.



## Services

### Services

1. Briefing regarding risks associated with Mexican cattle imports was written for the Undersecretary of Marketing and Regulatory Programs.
2. CAHIA and NSU provided summary information on number and age of cattle imported from Canada during 2009 in response to a request from the Deputy Administrator.
3. CAHIA OnLine Map Service (OLMS) responded to over 70 requests and created over 250 map products during the FY10.
4. CAHIA staff assisted OCIO with the development of a gamma interferon module for TB data collection.
5. CAHIA staff consulted on U.S. Department of Agriculture initiative “The Veterinary Medicine Loan Repayment Program “.
6. CAHIA staff participated in CEAH VS 2015 working groups for Surveillance, Movement and Marketing, and Synthesis, July and August 2010.
7. CAHIA staff participated in an outreach working group for the American Association of Public Health Veterinarians. Brochures developed to inform practicing veterinarians about their role in public health and encourage improved communication among colleagues.
8. CAHIA staff provided consultation to the United Nations Food and Agriculture Organization (FAO) in Rome, Italy during an outbreak of anthrax in Bangladesh in 2010.
9. CAHIA staff provided Policy Analysis and Development staff assistance with an economic model developed in-house.
10. Cost and economic analyses for the Miami Animal Import Center disposal options project provided to APHIS: PPD.
11. Draft cost analysis for equine piroplasmosis surveillance, tracing, and control for NAHPP was completed
12. Economic impacts of domestic spread of FMD determined for the National Center for Animal Health Emergency Management.
13. Geospatial data and products (Landsat imagery and elevation data) prepared, processed and delivered to personnel in the International Services’ Screwworm Eradication Program in the Caribbean.
14. Geospatial technical support provided to the staff at the VS Iowa Area Office regarding the interpretation of soil survey data from the Natural Resources Conservation Service’s (NRCS) Web Soil Survey.
15. Input provided to the GAO review of the current statutory and regulatory framework, which governs live animal imports to prevent the introduction and spread of zoonotic and animal diseases.
16. Two methods of mapping poultry farms (remote sensed and simulated (FLAPS)) were evaluated and compared in a pilot area in Arkansas. Both methods could provide tools and data for emergency preparedness, targeted surveillance, and disease spread modeling.
17. Phase 1 of Cattle Farm Visitation by White-Tailed Deer Study completed.
18. Regional and global data accessed to understand transmission and population dynamics of HPAI H5N1.
19. Report on commercial bird imports to the Western Region was delivered to fulfill a congressional inquiry.
20. Spatial data for Game Management Units for North Dakota collected and distribution of chronic wasting disease in wild cervids was mapped.
21. Technical Support provided for VS for the ESRI Enterprise License Agreement.
22. Vector surveillance methodologies provided to OIE via the National Veterinary Institute, Technical University of Denmark.
23. Zone Identification Extraction Tool developed to compile zone residents from the North American Animal Disease Spread Model (NAADSM).

## Appraisal-Indemnity-Compensation Service Activities

24. Appraisal and Economic Consulting
  - a. Appraisal of beef cow (3x), organic dairy cow, dairy cows (2x), backyard poultry, commercial poultry (2x), upland game birds, and sheep discussed with VS field personnel.
  - b. General discussions on livestock compensation: VS personnel (5x), non-VS individuals (6x), and international visitors (2x).
  - c. General economic discussions with field personnel.
  - d. Periodic updates of dairy, commercial poultry (broilers, turkeys, table egg layers), and sheep scrapie appraisal calculators.
  - e. Revised presentation on commercial poultry appraisal, which is available via APHIS' compensation website.
25. Provided Livestock Values to VS field personnel
  - a. Dairy cows (4x), commercial poultry (2x), beef cows (4x), Muscovy ducks, Pekin ducks, beef feeders (2x), and goats
  - b. Professional reviews
  - c. Peer reviewed journals
  - d. Internal (VS) reviews
26. Appraisal Reports and Reviews of Appraisal Reports
  - a. Reviewed/rewrote three appraisal reports.
  - b. Appraisal reports for beef cows, whitetail and red deer completed.
27. Other Service Support
  - a. Help drafted VS' official response to a producer who appealed his valuation to U.S. Senator Stabenow.
  - b. Drafted APHIS' response to questions on livestock compensation that were posed by Dr. Songmoo Heo, Veterinary Attaché, Embassy of the Republic of Korea.
  - c. APHIS's response drafted to Wisconsin Senator concerning appraisal methods used by APHIS.
  - d. The Role of Livestock Compensation in Disease Surveillance" written for an OIE publication.
  - e. APHIS compensation website revised: [http://www.aphis.usda.gov/animal\\_health/mergingissues/compensation/comp.shtml](http://www.aphis.usda.gov/animal_health/mergingissues/compensation/comp.shtml)
28. Applications reviewed by private appraisers to obtain Purchase Business Agreement (PBA).



Training

**Training**

Title/Topic	Audience	Location	Date	Contact
1. Spatial Epidemiology Training	Veterinary Epidemiologists	Indonesia	Jan	Freier J.
2. Advanced Spatial Epidemiology	CIRAD (A French research centre working with developing countries to tackle international agricultural and development issues)	France	May	Farnsworth M.*
3. Spatial Epidemiology (ArcGIS I and II)	VS and State personnel	Colorado	Mar Jun	Freier J.
4. GPS	VS personnel	Colorado	Apr	Freier J.
5. Risk-based Targeted Surveillance for Avian Influenza	VMO's and AHT's involved in Live-Bird Markets	Georgia	Aug	Miller R.
6. Livestock Appraisal for VS field force	AHTs	North Carolina	Aug	Ott S.
7. Symposium and Workshop on Livestock Compensation	VS management and program staff	North Carolina	Aug	Ott S.
8. The Basics of Risk Analysis	Area Epidemiology Officer Training	Colorado	Aug	Portacci K
9. A Qualitative and Quantitative course on Risk Analysis	University professors	Ghana	Aug	Portacci K.*
10. Introduction to Risk Analysis	International government veterinarians	Colorado	Sep	Portacci K.*
11. Introduction to Risk Analysis	International government veterinarians	Ethiopia	Sep	Corso B.*

\*International audience

Major Accomplishments

## MAJOR PROJECTS COMPLETED IN FY10 BY CORE FUNCTION



### Emerging Issues Identification

#### Emerging Issues Identification

Project	Contributors	Description
<p>1. All-Source Scanning for Biosecurity Threats, Animal Health Threats, and Animal Agriculture Issues</p>	<p>Stewart I., Brown-Reid M., Akkina J., Bischoff B., Brown-Reid M., Harris R., Johnson C., Johnson K., Kristensen C., Nelson A., Quatrano C., Stewart I., Sweeney S., Weber W. , Williams E.</p>	<p>CAHIA analysts scanned and analyzed information obtained from public, open-source media to identify biosecurity threats and animal disease outbreak threats. The GIF Team used temporal and spatial analysis to perform quantitative analysis of data reported by structured databases (e.g., FSIS, Argus) to identify adverse animal health situations. Additionally, the GIF Team conducted surveillance for emerging issues, factors, and conditions that increase the risk of disease introduction to the U.S. All-source scanning allowed the GIF Team to: (1) alert VS leadership to critical issues with timely and advance information, (2) provide information to VS strategic planners to effectively prioritize and allocate resources, and (3) respond to requests from “One Health” interagency partners (e.g., NBIC, NCMI, CDC, etc.) concerning animal and public health issues.</p>
<p>2. An Animal Health Alert System Based on Argus Animal Health Event Data: Proof of Concept</p>	<p>Nelson A., Akkina J., Kristensen C., Quatrano C., Williams E.</p>	<p>CAHIA completed a project to evaluate the utility of Argus data to identify emerging animal diseases or emerging adverse climatic, geographic, environmental or meteorological situations. The objectives of the project were to: (1) evaluate data from the Argus global collection system to identify potential variables or signals that may indicate an emerging disease, and (2) develop a proof of concept to establish that structured data from the Argus collection system can provide early warning of emerging diseases or add additional information to data that are collected and reported by Argus. Four known emerging diseases were analyzed: Porcine Respiratory Reproductive Syndrome (PRRS) in China and Vietnam (2006-2007); Bluetongue in Europe (2006-2007), African Swine Fever in Georgia and former Soviet states (2007) and Bleeding Calf Syndrome in Europe (2009). By analyzing available Argus data from these time periods, CAHIA found that structured Argus data have the potential to provide early signals of emerging adverse animal health conditions. The results of this project were shared with the Argus staff at Georgetown University.</p>

Project	Contributors	Description
3. An Animal Health Monitoring System Based on Slaughter Condemnation Data	Weber W., Akkina J., Kristensen C., Haley C. (NAHMS), Williams E.	CAHIA completed a paper entitled <i>An Animal Health Monitoring System Based on Slaughter Condemnation Data: Proof of Concept</i> . This paper presented CAHIA’s work to analyze FSIS slaughter condemnation data and to develop candidate methods to identify unusual or unacceptable condemnation rates that could indicate a developing adverse animal health situation. Methods were identified that allowed identification of emerging diseases sooner than without access to the slaughter condemnation data. This paper described comparison of our newly developed methods to a known outbreak: erysipelas in swine that became widely recognized when it reached epidemic levels in July 2001. If the methods CAHIA developed had been available in 2001, interested parties could have been alerted of a potential outbreak up to nine months earlier, in October 2000. The paper also described how CAHIA intends to apply proven methods to perform weekly monitoring of slaughter condemnation data in order to detect unacceptable levels of condemnation that may indicate a potential adverse animal health situation.
4. Assessment of the Potential Economic Impacts of Additional Testing Requirements for Cattle Imported from British Columbia	Stone K.	Estimated the potential economic impacts of implementing additional testing requirements for cattle imported from British Columbia, Canada. A change in requirements was under consideration due to three brucellosis positive cattle imported from British Columbia.
5. Assessment of Veterinary Infrastructure in Kazakhstan	Johnson C., Weber S. (OICC), Huddleston A. (PDS), Texas A & M University, APHIS FAS, APHIS IS	VS staff and two experts from Texas A&M University traveled to Kazakhstan in a collaborative effort with the APHIS Foreign Agricultural Service, APHIS International Services, and the U.S. Department of Defense to assess veterinary infrastructure in Kazakhstan. The group met with agriculture and veterinary officials, made site evaluations at laboratories, border posts, and universities, and listened to producer and stakeholder groups. The information was used to produce a comprehensive report of the veterinary infrastructure in Kazakhstan, focusing on laboratory functions, surveillance, legislation, and education. The report is being used to support efficient allocation of funds to Department of Defense animal health projects, and to create sustainable and viable surveillance and training systems relative to animal health within the country.

Project	Contributors	Description
6. Avian Influenza Risk Assessment for the United States: Determining Pathways of Disease Spread by Wild Birds	Farnsworth M., Miller R.	This NCAHEM-funded project linked wild migratory waterfowl movement patterns and sampling results for HPAI in those same species across the lower 48 United States. Results from this work have been compiled in a report to NCAHEM staff and national poultry staff to help in preparations for incursion of HPAI by this pathway.
7. CAHIA Animal Health Alerts and Advisories	Bischoff B, Johnson C., Harris R., Sweeney S.	CAHIA Animal Health Alerts and Advisories are brief reports to notify decision makers within VS of emerging diseases or important events that would be of immediate concern. Alerts and Advisories are published within 48 hours of detection of a disease outbreak or threatening condition. Advisories issued in FY10 include:  Alert: Mexico, Classical Swine Fever (12/1/2009)  Alert: Mexico, Suspected Venezuelan Equine Encephalitis (2/16/2010)  Advisory: Japan, Foot and Mouth Disease (4/30/2010)
8. CAHIA Animal Health Tracks	Bischoff C., Johnson C., Harris R., Sweeney S.	Animal Health Tracks is a brief weekly publication that provides summary information to VS personnel on emerging diseases and significant trade, scientific, or economic developments that might affect U.S. animal health or the economic value of U.S. animal agriculture.
9. CAHIA Response to International Services Regarding Tasks Related to the National Strategy for Countering Biological Threats	Lynn T., Mlakar J.	CAHIA immediately responded to a request from APHIS International Services to tabulate APHIS activities and information and identify communication gaps in the National Strategy for Countering Biological Threat. Information collected from CAHIA was coordinated by APHIS International Services and presented to the White House. The CAHIA report included a description of CAHIA's partnerships with the Biosurveillance Identifications and Warning Analytic Community (BIWAC), the National Center for Medical Intelligence (NCMI), and CEAH's role as an OIE Collaborating Center.
10. Descriptive Analysis of Wild Bird Imports to the United States 2004-2008	Kristensen C, Sweeney S.	This report summarized the number of wild birds imported into the United States as derived from information contained in the Law Enforcement Management Information System (LEMIS) database. The report provided summary statistics of wild bird imports by order, family, genus, country of origin, port of entry, and purpose. The report also discussed changing potential risks associated with observed trends in wild bird imports.

Project	Contributors	Description
11. Descriptive Analysis of Wild Mammal Imports to the United States 2004-2008	Kristensen C., Sweeney S.	This report summarized wild mammal imports to the United States as derived from the Law Enforcement Management Information System (LEMIS) database. The report provided summary statistics of wild mammal imports by order, family, genus, country of origin, port of entry, and purpose. The report discussed changing potential risks resulting from the observed trends in wild mammal imports.
12. Descriptive Analysis of Wild Reptile Imports to the United States 2004-2008	Kristensen C., Sweeney S.	This report summarized wild reptile imports to the United States as extracted from the Law Enforcement Management Information System (LEMIS) database. The report provided summary statistics of wild reptile imports by order, family, genus, country of origin, port of entry, and purpose. The changing potential risks resulting from observed trends in wild reptile imports were identified and discussed.
13. Emerging Disease Notice: Bleeding Calf Syndrome	Bischoff B., Harris R.	CAHIA published an Emerging Disease Notice on bleeding calf syndrome that was identified in young beef and dairy calves in multiple European countries. The Emerging Disease Notice summarized what was known and not known about the disease, likely causes of the disease, investigations being conducted to determine the cause, and the level of risk of introduction to the United States.
14. Emerging Disease Surveillance Plan	Mlakar J., Akkina J., Bischoff B., Brown-Reid M, Harris R., Johnson C., Johnson K, Kristensen C., Nelson, A., Quatrano C., Stewart I., Sweeney S, Weber S., Williams E.	This document described the process for identifying emerging animal diseases, evaluating the risk that emerging diseases present to the United States (U.S.), and communicating findings on emerging diseases to Veterinary Services (VS) leadership. This document described the objective of emerging disease surveillance, the criteria, data sources, and risk evaluation methods employed, and current and planned research and development that the GIF Team uses to improve its ability to identify emerging diseases, evaluate the risk that emerging diseases present to the U.S., and to communicate findings on emerging diseases in the future.
15. Equine Issues Workshop	Bischoff B., Traub-Dargatz J. (NAHMS)	CAHIA and NAHMS planned and conducted an Equine Issues Workshop in which Veterinary Services employees interacted with Federal, State, and industry representatives to discuss the presence and cooperative control of contagious equine diseases in the United States. Highlights of the workshop were presented to an open session of the American Horse Council Forum. The meeting provided an opportunity for all partners in the U.S. equine industry to discuss ways to collaborate to optimize the health and marketability of U.S. horses.

Project	Contributors	Description
16. Global Intelligence and Forecasting Team Strategic Plan 2010-2011	Mlakar J., Akkina J., Bischoff B., Brown-Reid M., Harris R, Johnson C., Johnson K., Kristensen C., Nelson A., Quatrano C., Stewart I., Sweeney S., Weber W., Williams E.	This document outlined the strategic plan for the Global Intelligence and Forecasting (GIF) Team within CEAH's Center for Animal Health Information and Analysis. The document described the vision and mission for the GIF Team, the scope of GIF Team work, the strategic priorities for the GIF Team for fiscal years 2010 and 2011, how GIF Team work supports the mission of USDA:APHIS:Veterinary Services priorities and the Veterinary Services 2015 Vision, and how the GIF Team measures progress toward its goals.
17. Infectious Disease Alert: Potential Re-Introduction of Screwworm to the United States	Stewart I., Brown-Reid M.	CAHIA veterinary analysts at the National Center for Medical Intelligence (NCMI), produced infectious disease alerts on potential reintroduction of New World Screwworm into the United States after the Haiti earthquake in January, 2010. The alert was distributed to many "One Health" interagency partners and was included in a White House daily situation brief.
18. Intelligence on Drug Cartel Violence at Texas/Mexico Border	Stewart I., Brown-Reid M.	CAHIA analysts at the National Center for Medical Intelligence (NCMI) provided weekly intelligence reports on drug cartel violence at the Texas/Mexico border as requested by the APHIS Associate Administrator. This information is used to provide situational awareness and decision support for APHIS employee safety during mission critical activities.
19. Intelligence Product: Defense Intelligence Summary on Afghanistan	Stewart I., Brown-Reid M.	CAHIA veterinary analysts at the National Center for Medical Intelligence (NCMI) completed a Defense Intelligence Summary on Afghanistan that provided an overview and assessment of Afghanistan's veterinary health services. The document is classified SECRET.
20. Intelligence Product: Threat of an Accidental Introduction of Wheat Stem Rust, UG99 into the United States	Stewart I., Brown-Reid M.	CAHIA veterinary analysts at the National Center for Medical Intelligence (NCMI), in collaboration with Department of Homeland Security analysts at NCMI, completed an intelligence product on the threat of an accidental introduction of Wheat Stem Rust, UG99 into the United States. The document is classified SECRET.
21. Issue Paper: Potential Risks from Increased U.S. Bison Imports from Canada, 2004-2008	Kristensen C., Johnson K.	This paper identified potential risks to the United States associated with increasing volume of bison entering from Canada. The paper described recent growth in the North American bison industry, summarized current regulations governing bison imports, and described potential pathways of disease introduction, consequences of disease introduction, and food safety concerns.

Project	Contributors	Description
22. Issue Paper: Future Farm: Trends Affecting Animal Agriculture	Quatrano C, Nelson A.	<p>This paper gathered and communicated information on emerging issues that could directly or indirectly affect global or domestic animal agriculture in order to increase awareness of Veterinary Services (VS) personnel and assist VS leadership in preparing for and adapting to change with timely, relevant information. There were three sections: trends, forecasts, and impacts that affect VS. Trends were included based on relevance and potential impact to VS. Forecasts were provided to illustrate how trends may shape the future operating environment. The impacts section contained information on how current trends and forecasts affect VS operations. The Future Farm paper enhances VS personnel’s understanding and awareness of current trends, helps VS personnel make better-informed decisions, and helps shape the policy direction of VS to meet future challenges.</p>
23. Memorandum: Issues Resulting from U.S. Legislation on Horse Slaughter and Horse Transportation	Johnson K.	<p>CAHIA completed a Memorandum of Information for the under Secretary of Agriculture entitled <i>Issues Resulting from U.S. Legislation on Horse Slaughter and Horse Transportation</i>. The document described trends in live horse and horse meat trade for Canada, Mexico, and the United States. Recent U.S. legislation regulating the slaughter and transportation of horses has: (1) increased the transportation time and stress for horses sent to slaughter, (2) relinquished the U.S.’ ability to protect American horses from inhumane slaughter methods in foreign facilities, (3) increased the number of abused and abandoned horses, (4) stopped the U.S. from exporting horsemeat, and (5) decreased the value of American horses.</p>
24. Summary and Analysis of Recent FMD Outbreaks in Asia	Harris R., Sweeney S., Johnson C., Devlin E.	<p>CAHIA completed three consecutive written monthly descriptions of recent outbreaks of foot-and-mouth disease (FMD) in Asia for the Deputy Administrator’s office. Each analysis included a document that summarized recent FMD events in Asia, explained what was known and not known about those events, why these events were important, identified potential risks of introduction to the United States, and outlined actions and precautions in place to prevent introduction of FMD into the United States. The analyses included a timeline of recent FMD events in Asia and maps displaying the spatial distribution of FMD outbreaks over time.</p>

Project	Contributors	Description
25. Veterinary Health Systems Database	Stewart I., Brown-Reid, M., Devlin E., Cavender K., Thomas S.	CAHIA collaborated with the National Center for Medical Intelligence (NCMI) to compile information for a world veterinary health systems database. The objectives of this project are to develop a searchable database that can be used to: (1) extract foreign country veterinary infrastructure data (animal disease status, surveillance reports, regulatory structure, veterinary personnel, laboratory capabilities, vaccine administration and production, etc.), (2) provide the baseline data of worldwide regulatory veterinary systems to validate/verify/identify deficiencies in open source reporting, (3) produce intelligence assessments that guide policy makers on issues such as strategic planning, trade facilitation/negotiations and identification of potential threats to U.S. agriculture, and (4) produce animal health assessments and reports to enhance situational awareness for Federal planning and operations that need quick access to comprehensive world veterinary infrastructure information.
26. Worldwide Influenza Surveillance: H1N1	Stewart I., Brown-Reid M.	USDA NCMI agricultural analysts monitored the emergence of novel influenza type A-H1N1 virus and provided worldwide novel A-H1N1 influenza surveillance results for use by the USDA National Swine Surveillance Program. CAHIA analysts continually monitor and track confirmed cases of A-H1N1 in swine for country surveillance activities worldwide.
27. Worldwide Influenza Surveillance: H5N1	Stewart I., Brown-Reid M.	USDA NCMI agricultural analysts assisted the NCMI influenza group in monitoring the spread of highly pathogenic avian influenza (H5N1) in birds worldwide. The analysts reported new confirmed H5N1 cases in countries or administrative units where the disease had not been previously reported and contributed written information to NCMI influenza intelligence products. Examples include researching new HPAI cases in Egypt for the four new provinces (Al Wadi, Al Jadid, Hilwan, and Luxor); preparing a synopsis of Bhutan first reported case of HPAI (H5N1); answering questions regarding Brazil's HPAI programs; arranging teleconferences with David Swayne (USDA: ARS) to answer questions about H5N1 genetic shifts in relation to vaccine resistance; providing website links that discuss the AI wild bird monitoring that began in 2006; researching information pertaining to HPAI (H5N1) in China in birds; obtaining information regarding reports of Texas outbreak of avian influenza; and determining if HPAI occurred in Guatemala and El Salvador.

Project	Contributors	Description
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**Student Projects**

28. Q Fever: An Emerging Disease in the Netherlands	Kotinsley L., Johnson R., Rosenfelder P., Mlakar J.	This emerging disease notice provided the most recent facts about the epidemic of Q fever in the Netherlands and general background information about the disease. This publication is based on a paper written by Ms. Laura Kotinsley of the University of Florida’s College of Veterinary Medicine, graduating class of 2011. The publication is available at <a href="http://webdev.aphis.usda.gov/animal_health/emergingissues/diseasenotice/notices.shtml">http://webdev.aphis.usda.gov/animal_health/emergingissues/diseasenotice/notices.shtml</a> .
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**Analysis Projects**

**Analysis Projects**

Project	Contributors	Description
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1. Analysis of Canadian Animal Import Quarantine Process	Nelson A., Quatrano C., Harris R.	CAHIA provided the Planning, Finance, and Strategy (PFS) office with an analysis of the Canadian animal import quarantine process to support VSMT discussions regarding the future of animal import centers. The analysis compared U.S. and Canadian import quarantine fees, inspection protocols, and funding sources for animal imports.
2. Assessing the applicability of Interstate Certificates of Veterinary Inspection (iCVI) as a tool for animal disease traceability	Portacci K., Miller R., Abrahamsen L., Thomas S	This project will assess the usefulness of interstate Certificates of Veterinary Inspection (iCVI) as a tool to support animal disease traceability. ICVI’s from 49 states will be assessed in terms of data content, which would support rapid and efficient tracing of animals during a disease event. The study will assess location information and animal identification information. Data has been collected and is now being prepared for analysis.
3. Risks to livestock and poultry associated with the U.S. military buildup in the Micronesian Region.	Stone K., Berthoud C.(PPQ VRS), Brickler G.(VS WR), Corso B., Gauthier J.(NCIE RES), Jimenez D., Kotowski I.(NCIE RES), Mitchell M., Nelson A., Portacci K., Price J.	This assessment estimated the potential risk to livestock and poultry associated with the military transfer from Okinawa to Guam. This assessment discussed the potential diseases and vectors, which could introduce foreign animal diseases from Okinawa into Guam, a U.S. territory. The assessment will become an integral part of biosecurity plan for the Micronesian Region. The assessment focused on potential diseases and associated vectors of concern to livestock and poultry coming in through multiple pathways. This assessment will be used to inform a biosecurity plan written for the Micronesian Region to help mitigate diseases and vectors from entering Guam and the Micronesian Region.

Major Projects

Project	Contributors	Description
4. Briefing paper: HR1549 Preservation of Antibiotics for Medical Treatment of 2009	Clouse T., Mitchell D., Quatrano C., Portacci K., Price J., Sweeney S.	CAHIA staff provided a briefing to the CEAH Director on the potential impacts of HR1549 on animal health, producers and consumers, and VS. The paper reviewed the impact of antibiotic reduction for production purposes on the Danish livestock population and other available literature. Modifications to HR1549 suggested to address VS' concerns.
5. Cattle Appraisal Values	Ott S.	The cooperative agreement with LMIC on improving cattle valuation was completed. The dairy appraisal calculator was upgraded based upon analysis of cull cow prices. Cull cow price data were obtained from a cooperator with the Livestock Marketing Information Center (LMIC). LMIC reviewed the dairy calculator and delivered calculators for appraising beef cows and beef feeder cattle.
6. Commercial Bird Import Risk Assessment	Sweeney S., Johnson R., Portacci K., Kristensen C., Weaver T.	This project was requested by the VS Area Office in Conyers, Georgia in response to a biosecurity breach in a shipment of pet birds transiting Atlanta International Airport from South Africa. VS temporarily halted further shipments until mitigation measures in construction of shipping containers were taken by the exporter. Preliminary discussions with VS-Georgia raised questions about whether limited ports have adequate facilities to handle commercial pet bird shipments that arrive with high rates of illness or death, and whether such shipments would be more appropriately managed by a quarantine center or held for return to the country of origin. To support development of biosecurity measures, CAHIA conducted a risk assessment to estimate the likelihood of cross exposure of domestic poultry to imported commercial shipments of exotic (non-native) pet birds transiting selected (Atlanta, Houston, and Washington Dulles) airports in the United States. The risk assessment estimated the effectiveness of existing risk mitigation measures and identified additional measures that VS could implement to strengthen avian biosecurity at the ports.
7. Country Risk Rankings	Corso B., Gordon R.(NCIE RES), Cougill J. (NCIE RES), Weber W., Akkina J.	Countries were ranked by the risk of introduction of foreign animal diseases of interest, based on their USDA-recognized animal disease status. These rankings are for use by DHS' Customs and Border Protection personnel, along with other tools, to better target passengers and passenger baggage for enhanced inspection. Collaborators included NCIE REC and PPQ VRS.

Project	Contributors	Description
8. Offshore Pest Information Program (OPIP) Animal Health Guidelines for the Asia and Pacific Cone region	Patyk K, Abrahamsen L., Corso B.	The Offshore Pest Information Program (OPIP) Animal Guidelines for the Animal and Plant Health Specialists (APHSS) in the Asia and Pacific Cone region were completed. These guidelines will be used by APHSS to help generate relevant reports for the Offshore Pest Information System (OPIS). The report was forwarded along with PPQ Guidelines for APHIS for incorporation into a single document.
9. Poultry Appraisal Values	Ott S.	Agri Stats Inc. fulfilled its cooperative agreement contract to provide APHIS with current (2009) cost and productivity data for commercial broiler, turkey, and table egg production. The broiler appraisal calculator was updated and the other two calculators are being updated.
10. Risk Assessment: Introduction of New World Screwworm to the US, Mexico and Central America from the Caribbean	Corso B., Voelker L(NCIE RES), Zepeda C., Freier J., Gordon R. (NCIE RES), Mitchell D.	The analysis was designed to determine the risk of introducing new world screwworm from infested Caribbean countries to Central America, Mexico, or the United States. The potential change in risk due to relaxation or removal of trade barriers between the United States and Cuba was also discussed. Collaborators included NCIE RES and CEAH OICC.
11. Sheep Appraisal Values	Ott S.	The price series which provides ewe prices for the scrapie calculator often has missing price information. Mathematical analysis yielded a plausible method for imputing missing price data. Accurately estimating missing values allows the price calculation to more accurately reflect current market conditions.
12. Spatial and Temporal Relationships of <i>Mycobacterium bovis</i> in Animals of the United States	Miller R., Portacci K., Abrahamsen L.	This collaborative project between National Veterinary Services Laboratory (NVSL) and CAHIA enhanced the understanding and quantification of spatial and temporal patterns of <i>Mycobacterium bovis</i> in the United States. Specific goals included improving understanding of patterns of <i>M. bovis</i> which may provide support to enhanced surveillance, improved understanding of risk for emergence and improved program decision making. Exploratory analysis, data collection, cleaning, and development were completed
13. Swine Appraisal Values	Ott S.	A cooperative agreement with LMIC was established to quantify various price relationships to be used to provide major improvements to the swine appraisal calculator.
14. A state-by-state assessment of the risk of introduction of CSF into domestic swine herds in the United States	Corso B., Lane C., Maroney S., Howe R., Bjornsen M.	This assessment provided NSU with a tool to update the CSF surveillance plan for the United States. The tool ranks States using parameters that identify the States at highest risk of introduction of CSF into domestic swine herds.

Project	Contributors	Description
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**Student Projects**

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| 15. Japanese Encephalitis: Background and Potential Threat to the United States | Swart M., Akkina J. | CAHIA analysts researched and presented information on Japanese Encephalitis as an emerging threat to the U.S. This document described what is known and not known about Japanese Encephalitis, the potential pathways of introduction to the U.S., and the risks Japanese Encephalitis might present to the U.S. |
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**Disease Spread & Impact Modelling**

**Disease Spread and Impact Modeling**

Project	Contributors	Description
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| 1. Develop a Brucellosis Management Area Model  | Portacci K., Koprak C, Miller R. | This model was developed to assist the Western Region with the evaluation of designated surveillance areas for brucellosis. This model is consistent with the proposed interim rule, which will be put out by brucellosis staff in November 2010 and require States with a wildlife reservoir to designate an area of higher risk for management purposes. The results of the model are intended to inform the development of memorandums of understandings with States. |
| 2. Scenario Bank, repository for epidemiological modeling                                     | Forde-Folle, K.                  | White paper developed to describe the creation of a Scenario Bank repository for epidemiological modeling studies to store and organize model inputs and results.  |
| 3. Spatial and Temporal Analysis of HPAI H5N1 Using FAO's Global Outbreak Database (EMPRES-i) | Farnsworth M.                    | Determined the utility of data stored in EMPRES-i for modeling and visualizing space-time dynamics of H5N1, and for identifying epidemiological drivers across multiple spatial and temporal scales. Results from this work were published in Preventive Veterinary Medicine.  |



**Services**

**Services**

Project	Contributors	Description
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| 1. National Tick Survey: American Dog Tick County Distribution Map | James A., Kraus B., Malmberg J. | Completed the data quality review and county level distribution maps for the American dog tick. A publication is in progress on the Distribution, seasonality, and hosts of the American dog tick, <i>Dermacentor variabilis</i> , in the United States. |
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Project	Contributors	Description
2. Risk Assessment Tool to Support the Designated Surveillance Area for Brucellosis in Three States Surrounding the Greater Yellowstone Area	Portacci K., Koprak C., Miller R.	The project was requested by the Western Regional Office. The purpose of the project was to develop a tool to determine risk for brucellosis for zoning of the Greater Yellowstone Area for the purpose of brucellosis management.
3. Technical Support of VS for the ESRI Enterprise License Agreement	Miller R., Fox A., McCool M, Maroney S.	CAHIA spatial staff provided first-tier technical support to all members of VS who use any ESRI GIS software product. Support Includes basic troubleshooting, product ordering, licensing, installation issues, and opening of support calls with ESRI Technical Support. Support also included consulting with personnel on the appropriate use of spatial data and spatial capabilities of the software. Provision of in-house technical support was a requirement of the original and the renewed USDA Enterprise License Agreement with ESRI. This was the sixth year of support.



Training

**Training**

Project	Contributors	Description
1. ArcGIS I Spatial Epidemiology Training, March 2 – 4, 2010	Freier J., Fitzmaurice P., McCool M., Maroney S., Fox A., Riggs P.	This course covered the fundamental methods of analyzing the geographic distribution of animal populations and describing or mapping spatial relationship to disease risk factors. Emphasis was placed on the use of ArcGIS tools in establishing epidemiological measurements and quantifying levels of risk and pathogen movement through animal populations, confined and free ranging. State-of-the-art methods were applied in describing animal populations at risk of pathogen exposure and transmission. These methods will assist VS in assessing the status of incidents and evaluating the effectiveness of control measures.
2. ArcGIS II Spatial Epidemiology Training, June 29 – July 1, 2010	Freier J., Fitzmaurice P., McCool M., Maroney S., Fox A., Riggs P.	This course built on the fundamental methods covered in the Spatial Epidemiology I course and used advanced raster-based methods in analyzing the geographic distribution of animal populations, describing or mapping spatial relationship to disease risk factors, generating spatial trend analyses, and developing spatial models. Emphasis was placed on the use of ArcGIS tools in establishing epidemiological measurements and quantifying levels of risk and pathogen movement through animal populations, confined and free ranging. These methods will assist VS in assessing the status of incidents and evaluating the effectiveness of control measures.

Project	Contributors	Description
3. Developing a Cadre of Qualified Private Appraisers	Ott S. (CAHIA) and Mann J. (MRBPS)	To streamline the hiring of private appraisers and to improve the quality of their appraisal reports a joint CAHIA MRBPS project was initiated. This innovative project developed procedures for private appraisers to obtain a Purchase Business Agreement (PBA). PBAs streamline the hiring process because it eliminates the time consuming open bidding process associated with hiring private appraisal services. As part of the PBA process private appraisers must submit an appraisal report that demonstrates their appraisal competency and ability to provide the type of appraisal report desired by APHIS.
4. GPS Training, April 27 – 28, 2010	Freier J., Fitzmaurice P., Fox A.	The training course built GPS user skills in obtaining geographic coordinates for animal facilities, navigating to multiple facilities for case investigations or follow-up work, and developing routes for operational activities involving repeated visits to the same location by different staff members. GPS observations of farm locations provided a means to work efficiently in mapping animal facilities and in directing field staff to specific locations for epidemiological investigations. Navigation technologies were an important way of doing business and the skills developed in this course built on these well-tested business applications. This course focused on bringing navigation skills into the routine work conducted by VS staff.
5. ITRCB Capacity Building Training in Advanced Spatial Epidemiology to CIRAD – Montpellier, France	Farnsworth M.	This training course focused on advanced methods for understanding spatially structured risk factors associated with disease outbreaks. The course introduced the use of hierarchical Bayesian spatial models for identifying risk factors across multiple spatial scales. The goal was to provide a set of tools to epidemiologists and analysts working in the international arena.
6. Proactive Risk Assessment Handbook	Clouse T., Weaver T., Malladi S., Johnson K., University of Minnesota Center for Animal and Food Safety	Handbook written for conducting proactive risk assessments that is applicable across various disease/industry/product combinations. The handbook is designed to give domestic and international parties guidance on conducting assessments and compare them to conventional risk assessment methods.  Status: Preliminary planning and coordination underway. First draft to be completed in fourth quarter FY11.
7. Risk-based Targeted Surveillance for Avian Influenza at the Live-Bird Marketing System Continuing Education Course in Athens, GA	Miller R.	This training was an invited lecture as part of the VS Staff-organized training for the Live Bird Marketing System continuing education training. Lectures have been provided for the past 3 years and focused on describing targeted surveillance, based on risk for transmission of avian influenza, to Federal and State health officials.

## MAJOR MILESTONES COMPLETED IN FY10 FOR LONG-TERM PROJECTS



### Analysis Projects

#### Analysis Projects

Project	Contributors	Description
1. Proactive Risk Assessments	Clouse T., Weaver T., Malladi S., Johnson K.	Conduct proactive risk assessments in support of FAD response planning for HPAI and FMD. Completed risk assessments for shell eggs, nest run eggs, hatching eggs, and ready-to-eat pork products.
2. Miami Animal Import Center Disposal Options Analysis	Mitchell D.	Develop an analysis document to inform VS management of the disposal options available to the Miami Animal Import Center. The analysis will include detailed descriptions of the disposal options, pros and cons, and economic costs associated with each option. A first draft of the document is in the review process.



### Disease Spread & Impact Modelling

#### Disease Spread and Impact Modeling

Project	Contributors	Description
1. Farm Location and Animal Population Simulator (FLAPS) – Project Plan for Upgrades and Improvements	Maroney S., Kraus B., Riggs P., Miller R.	The Farm Location and Animal Population Simulator provides an agriculturally representative dataset for planning responses to animal incidents and for input into disease spread models, such as NAADSM. This information helps VS respond rapidly and efficiently to disease incursions through an improved understanding of the geographic distribution of susceptible populations and estimation of possible contact frequencies. Incorporating FLAPS data into models and incident planning helps VS respond better to animal health events.
2. NIMBioS: Modeling the impact of cattle movements on transmission dynamics of bovine tuberculosis in the United States at local and national scales	Portacci K., Miller R., Farnsworth M., Lombard Riggs P.	This collaborative project with the National Institute for Mathematical and Biological Synthesis, Colorado State University, and CAHIA will enhance the understanding and quantification of cattle movement in the United States. The goal of this working group is to develop network models of cattle movement and the spread of bovine TB in the U.S. that can be used to investigate alternative control and eradication strategies. Specific goals include developing a quantitative data-driven animal movement model for the U.S. and a disease spread model for bovine tuberculosis. Data collection for the project was completed and preliminary analysis has begun.

Project	Contributors	Description
3. Quads Epi Team	Corso B., Forde-Folle K.	The U.S. has been responsible for chairing the Quads EpiTeam this year; Corso B. is filling that role. The EpiTeam is a subgroup of the QUADS Emergency Management Working Group and includes members from Australia, Canada, New Zealand, and the U.S. (QUADS members), as well as the UK and Ireland. The group was formed to strengthen collaboration in areas of epidemiology and modeling.
4. Cattle Farm Visitation by White-Tailed Deer: Understanding Visitation and Predicting Contact Rates for Control of Bovine Tuberculosis	Miller R., Farnsworth M., Rigg P., Malmberg J.	This collaborative project between National Wildlife Research Center (NWRC) and CAHIA will enhance the understanding and quantification of indirect contact rates between white-tailed deer and cattle in Michigan for the purpose of controlling bovine TB. Specific goals include optimizing farm-side mitigations to best control TB transmission, quantifying contact rates for input into risk assessment models and animal disease spread models, and identifying risk factors related to deer visiting farms to improve understanding of risks for TB transmission and transmission of any FAD. Phase 1 of the project was completed.



Training

Training

Course	Instructor	Description
1. International Introduction to Risk Analysis course	Corso B., Portacci K., Clouse T. and Stone K. (along with Zepeda C. from OICO and Voelker L. of NCIE/RESI)	On Sept. 27-Oct 1, 2010, CAHIA hosted the Introduction to Risk Analysis course sponsored by the ITRCB. Sixteen students attended, from 16 different countries. Topics covered all of risk analysis, including both qualitative and quantitative risk assessment, as well as both domestic and trade risk analyses. The role of the OIE and economic assessment were also covered. Students were required to work in groups on projects during the week, and present their results. Reviews were very good, and CEAH is planning to host a similar class in FY11.
2. Risk analysis training – Capacity building in Africa	Corso B., Portacci K.	Katie Portacci taught the VS portion of a Risk Analysis course in Accra, Ghana August 9-20, 2010 with Dr. Voelker, L. from NCIE, as well as assisting students in performing risk analyses in class. Other course instructors include Drs Gary Cave and Stephanie Bloem with PPQ, and faculty from Tuskegee University. This two-week course covers SPS standards for risk analysis set by OIE, IPPC, and Codex Alimentarius. Corso B. performed similar activities at the course in Addis Ababa, Ethiopia Sept 13-24, for participants from East Africa, along with Julie Gauthier from NCIE, Stephanie Bloem, Ed Podleckis from PPQ, and faculty from Tuskegee.

Course	Instructor	Description
3. Introduction to Epidemiological Simulation Modeling Course	Kim Forde-Folle	CEAH, in cooperation with Colorado State University, Fort Collins, CO, January 11–15, 2010  The course informed concepts of disease spread and control from the perspective of a modeler. These epidemiologic principles were presented and developed in the context of disease models. The course began using simple deterministic models, and progressed to the use of and development of parameters for a detailed, stochastic, temporal, spatial simulation model of contagious animal disease.
4. Risk Analysis course, Accra, Ghana, August 9-20, 2010	Katie Portacci	The two-week course covered SPS standards for risk analysis set by OIE, IPPC, and Codex Alimentarius.  Dr. Katie Portacci taught the VS portion of the course with Dr. Voelker, L. from NCIE, Drs Gary Cave and Stephanie Bloem with PPQ, and faculty from Tuskegee University.

## PRESENTATIONS AND POSTERS

Location	Presenter	Presentation/Poster
1. International Society for Disease Surveillance Annual Conference, Miami, FL, December, 2010	Judy Akkina	<b>Poster:</b> Monitoring of Open-Source Data on Emerging Animal Disease Events Using an Aberration Detection Algorithm
2. International Conference on Emerging Infectious Diseases, Atlanta, GA, July 2010	Judy Akkina	<b>Poster:</b> Assessing the Increased Consumer Demand for Raw Milk in the United States and the Need for Education, Quality Standards, and Research
3. International Conference on Emerging Infectious Diseases, Atlanta, GA, July 2010.	Barbara Bischoff	<b>Poster:</b> Communicating with Those in Animal Agriculture About Emerging Zoonotic Diseases in the United States
4. University of Minnesota and industry officials August 30 – September 3, 2010	Tim Clouse	<b>Presentation:</b> The Ready-To-Eat pork products risk assessment
5. Jakarta, Indonesia, September 2010	Matthew Farnsworth	<b>Presentation:</b> Identifying Epidemiological Dynamics and Determinants of HPAI H5N1 Across Indonesia
6. International Conference of the Wildlife Disease Association. Iguazu, Argentina, May 2010	Matthew Farnsworth	<b>Presentation:</b> Multi-scale demographic and environmental determinants of avian influenza in wild migratory waterfowl across the lower forty-eight United States
7. USDA – National Wildlife Research Center, Collaborative Research Series, Fort Collins, CO, April 2010	Matthew Farnsworth	<b>Presentation:</b> Linking Pattern to Process: Space-time Disease Dynamics in Agricultural and Wildlife Systems

	Location	Presenter	Presentation/Poster
8.	USDA – Centers for Epidemiology and Animal Health Colloquium Series, Fort Collins, CO, November 2009	Matthew Farnsworth	<b>Presentation:</b> Using space-time outbreak patterns to identify epidemic mechanisms: Landscape dynamics of H5N1 HPAI
9.	International Conference on Emerging Infectious Diseases, Atlanta, GA, July 2010	Cynthia Johnson	<b>Poster:</b> A Methodology for Assessment of Intervention Options to Inform Decision-Making in Animal Health: TAI0
10.	Center for Disease Control and Prevention (CDC) in Fort Collins, CO, September 2010.	Camilla Kristensen	<b>Presentation:</b> Wild Animal Imports to the United States
11.	Live Bird Market Survey course in Saint Paul, Minnesota, August 2010	Ryan Miller	<b>Presentation:</b> Risk-Based Targeted Surveillance for Avian Influenza in Wild Birds
12.	International Conference on Emerging Infectious Diseases. Atlanta, Georgia. July 2010	Ryan Miller	<b>Presentation:</b> Spatial and Temporal Relationships of <i>Mycobacterium bovis</i> in Animals of the United States
13.	Society for Risk Analysis Annual Meeting. Baltimore, MD, December 2009	Ryan Miller	<b>Presentation:</b> Assessing the Risk of Contact and Transmission of Bovine Tuberculosis between Cattle and Deer for the Purpose of Regionalization
14.	Society for Risk Analysis Annual Meeting. Baltimore, MD, December 2009	Ryan Miller	<b>Presentation:</b> Risk-based Targeted Surveillance: Identifying Areas and Populations of Importance for Surveillance of High Path Avian Influenza
15.	Food and Drug Administration Center for Food Safety and Applied Nutrition, Riverdale, MD	Ryan Miller	<b>Presentation:</b> Assessing the Risk of Contact and Transmission of Bovine Tuberculosis between Cattle and Deer for the Purpose of Regionalization
16.	Food and Drug Administration Center for Food Safety and Applied Nutrition, Riverdale, MD	Ryan Miller	<b>Presentation:</b> Modeling the cattle movements on in the United States
17.	Recent Approaches in Modeling Animal Infectious Diseases Meeting, Teramo, Italy, September 2010	Ryan Miller	<b>Presentation:</b> Remote presentation for United States Network Modeling Initiatives: Characterizing cattle and sheep movements for the purpose of understanding disease transmission dynamics
18.	National Wildlife Research Center, Fort Collins, CO	Ryan Miller	<b>Presentation:</b> Introduction to the Center for Animal Health Information and Analysis: Current activities related to disease ecology and spatial epidemiology
19.	Food And Drug Administration Center For Food Safety And Applied Nutrition, Riverdale, MD	Ryan Miller	<b>Presentation:</b> Risk Analysis Projects Related to Cattle in the United States: Methods and Process
20.	USAHA Annual Meeting, San Diego, CA, October 2009.	Joseph Mlakar	<b>Presentation:</b> Emerging Disease Surveillance Plan Update

Location	Presenter	Presentation/Poster
21. Georgetown University Medical Center, Arlington, VA, December, 2009	Joseph Mlakar	<b>Presentation:</b> Global Intelligence and Forecasting Team Overview
22. Alcorn State University AgDiscovery Program	Diana Mitchell	<b>Presentation:</b> Key note address delivered by CEAH as an NCRLC member
23. AAEA Conference	Diana Mitchell	<b>Presentation:</b> Co-moderated the Appraisal, Indemnity, and Compensation session
24. Livestock Indemnity-Compensation Symposium & Workshop, July 23, 2010, CEAH, Fort Collins, CO	Stephen Ott	<b>Presentation:</b> How to develop alternative strategies that VS could use in compensating livestock owners  Panel of five agricultural economists—national experts on compensation and livestock insurance issues—made the presentation. The symposium was transmitted via videoconference to Riverdale and Raleigh. The invited experts were joined by VS' Alternative Livestock Compensation Committee
25. Agriculture and Applied Economics Association (AAEA) Conference, Denver, CO, July 27, 1010	Stephen Ott	<b>Presentation:</b> Moderated the Appraisal, Indemnity, and Compensation session and presented an overview of APHIS livestock indemnity and compensation
26. Delegations of Chinese dignitaries, CEAH, Fort Collins, CO, September and November, 2010	Stephen Ott	<b>Presentation:</b> Comprehensive overview of appraisal-indemnity-compensation issues (two different occasions)
27. Appraisal training course in Raleigh, NC, August 24-26, 2010	Stephen Ott	<b>Presentation:</b> Principles of livestock valuation; compensation overview: APHIS perspective; appraisal principles: USAPAP perspective; appraisal principles: APHIS perspective; how to use VS dairy appraisal calculator; and self-contained appraisal reports: what APHIS expects from private appraisers poultry valuation
28. Veterinary Services Management Team (VSMT), Fort Collins, CO, January 7, 2010	Katie Portacci	<b>Presentation:</b> Modeling the impact of cattle movements on transmission dynamics of bovine tuberculosis ( <i>M. bovis</i> ) in the United States  This was a collaborative project between CAHIA, Colorado State University and University of Tennessee. The project is funded through the National Institute of Mathematics and Biological Synthesis (NIMBioS), which is housed at the University of Tennessee and is sponsored by the National Science Foundation (NSF), U.S. Department of Homeland Security (DHS), and USDA.
29. USAHA Committee on Animal Emergency Management (CAEM), June 24, 2010	Katie Portacci	<b>Presentation:</b> NIMBioS TB model

Location	Presenter	Presentation/Poster
30. Animal Plant Health Inspection Service, Fort Collins, CO, May 25, 2010	Katie Portacci	<p><b>Presentation:</b> CAHIA and NAHMS demonstrated the brucellosis management area model to members of CEAH, the Western Region, and Brucellosis Staff</p> <p>This model was proposed as an evaluation method for brucellosis management. The basic model is complete and documented. Technical review of the model by an expert panel is next, followed by validation.</p>
31. Society for Risk Analysis annual meeting, Baltimore, MD, December 10, 2009	Todd Weaver	<p><b>Poster:</b> Approximate Infective Viral Load of Non-Pasteurized Liquid Egg from a Highly Pathogenic Avian Influenza-Infected, Undetected Flock</p> <p>Drs. Weaver, T. (CAHIA) and Malladi, S. (University of Minnesota) presented a poster based on their risk analyses performed in collaboration with other members of CAHIA (Clouse, T.), FSIS and the University of Minnesota Center for Animal Health and Food Safety.</p>
32. International Society for Disease Surveillance Annual Conference, Miami, FL, December 2010	Wolf Weber	<p><b>Poster:</b> Potential Use of Abattoir Condemnation Data to Monitor Animal Health</p>
33. CEAH Colloquium, Fort Collins, CO, February 2010	Wolf Weber	<p><b>Presentation:</b> An Animal Health Monitoring System Based on Slaughter Condemnation Data: Proof of Concept</p>
34. International Conference on Emerging Infectious Diseases, Atlanta, GA, July 2010	Wolf Weber	<p><b>Poster:</b> Development of an Animal Health Monitoring System Based on Slaughter Condemnation Data</p>

## COLLABORATIONS

### Emerging Disease Surveillance Collaborations

Title/Topic	Collaborator(s)	Contact
1. Identifying Emerging Diseases	National Center for Medical Intelligence (NCMI)/Argus/National Biosurveillance Integration Center	Mlakar J.
2. Demographic, Environmental, and Space-Time Determinants of Type A Influenzas in Wild Migratory Waterfowl of the United States	Wildlife Services, National Wildlife Disease Program, and VS National Poultry Staff	Farnsworth M. and Miller R.
3. Spatial and Temporal Analysis of HPAI H5N1 Using FAO's Global Outbreak Database (EMPRES-i)	International Services and the Food and Agriculture Organization of the United Nations	Farnsworth M.
4. Screwworm Risk Analysis	National Center for Import and Export (NCIE); Regionalization and Evaluation Services – Import (RESI), and Office for International Collaboration and Coordination (OICC)	Corso B.
5. Haiti: Risk of Reintroduction into the U.S. of New World Screwworm	Center for Animal Health Information and Analysis (CAHIA) and National Center for Medical Intelligence (NCMI)	Mlakar J.
6. Equine Piroplasmiasis (EP) Domestic Pathways Assessment	Center for Animal Health Information and Analysis (CAHIA); Risk Analysis Team (RAT); and Regionalization and Evaluation Services – Import (RESI)	Bjork K.
7. Guam risk assessment-for government buildup and biosecurity plan	Center for Animal Health Information and Analysis (CAHIA), Center for Plant Health Science and TECHNOLOGY (CPHST); National Center for Import and Export (NCIE); Plant Health Programs (PHP); and Wildlife Services (WS)	Stone K.
8. Use of Remotely Sensed Data in Epidemiological Models	National Institute of Health (NIH) –Department of Homeland Security (DHS); and Research and Policy in Infectious Disease Dynamics (RAPIDD)	Farnsworth M.

### Animal/Livestock Movement and Wildlife Interaction Collaborations

Title/Topic	Collaborator(s)	Contact
1. Cattle Farm Visitation by White-Tailed Deer: Understanding Visitation and Predicting Contact Rates for Control of Bovine Tuberculosis	National Wildlife Research Center (NWRC)	Miller R. and Farnsworth M.
2. National highly pathogenic avian influenza risk assessment for introduction and movement by wild migratory waterfowl	National Center for Animal Health Emergency Management (NCAHEM), National Wildlife Research Center (NWRC), and Colorado State University	Farnsworth M. and Miller R.

Title/Topic	Collaborator(s)	Contact
3. Modeling Sheep Movements in the United States	Colorado State University and Penn State University	Miller R.
4. Maximum Entropy and other modeling approaches for modeling suitable tick habitat and potential distribution of tick species across the US	U.S. Geological Survey (USGS) Resource for Advanced Modeling Group	James A. and McCool M.
5. Denver Backyard Poultry Survey	Colorado State University – Department of Veterinary Science	Miller R, and Farnsworth M.
6. Release of the North American Animal Disease Spread Model (NAADSM) for use by South American countries	Center for Epidemiology and Animal Health (CEAH); Colorado State University (CSU); Animal Population Health Institute (APHI); Canadian Food Inspection Agency (CFIA); and National Center for Animal Health Emergency Management (NCAHEM)	Forde-Folle K.
7. Epizootiology and Ecology of Anthrax	The Food and Agriculture Organization (FAO) has been monitoring a large outbreak of anthrax in Bangladesh and contacted CEAH as it prepared recommendations in response to the outbreak. The FAO was specifically interested in anthrax publications by the Centers for Epidemiology and Animal Health.	Johnson R.
8. Differentiation of Naturally Occurring from Non-Naturally Occurring Epizootics of Anthrax in Livestock Populations		

**Federal/State/Industry Disease Eradication Collaborations**

Title/Topic	Collaborator(s)	Contact
1. Offshore Pest Information Program Coordination Group	Plant Protection and Quarantine, and International Services	Corso B., and Johnson C.
2. Technique for the Assessment of Intervention Options (TAIO)	National Surveillance Unit (NSU) and the Office for International Collaboration & Coordination (OICC)	Clouse T., and Johnson C.
3. Afghanistan Veterinary Capacity Building	Dept of State (USAID) USDA International Services	Harris R.
4. One Health Epidemiology Emphasized In a CAHIA-CDC Collaboration	APHIS/CAHIA/CDC, OneHealth, University of Ghana (School of Public Health)	Freier J.
5. Modeling the Impact of Cattle Movements on Transmission Dynamics of Bovine Tuberculosis in the United States	National Institute for Mathematical and Biological Synthesis (NIMBioS)	Miller R., Portacci K. and Farnsworth M.
6. Bovine Tuberculosis (bTB) risk network	CAHIA/USDA/NAHMS/CSU	Miller R., and Portacci K.

Collaborations

## COMMITTEES, ADVISORY BOARDS, AND WORKING GROUPS

Working Group	Contact
1. Biosurveillance Indications and Warning Analytic Community	Lynn T., Mlakar J.
2. Risk assessments and additional collaborations with the Center for Animal Health and Food Safety at the University of Minnesota	CAHIA and Wagstrom L. from University of Minnesota
3. VS National Civil Rights Leadership committee. This membership is a collateral duty position for a 2-year term with the ability to extend up to 6 years.	Mitchell D.
4. CaribVet Epidemiology Working Group	Johnson C.
5. CEAH Equal Employment Opportunity Committee	Akkina J.
6. CEAH/NAHP Bovine TB Analytical Priorities Working Group	Portacci K., Miller R., Weaver T.
7. Colorado Veterinary Medical Association	Johnson C.
8. CEAH Colloquium in Animal Health Planning Team	Kristensen C.
9. Representative for government services (Federal and State) advised the AVMA at a meeting of the Committee on Environmental Issues at AVMA Headquarters in Schaumburg, Illinois, October 5–7	Portacci K.
10. Members of CAHIA/RAT cooperated with PDS, PPQ, IS, FDA, and Tuskegee CAHIA/RAT University and developed a 2 week risk analysis course, “Sanitary/Phytosanitary (SPS) Capacity Building and Risk Analysis Workshop” which was offered in two sites in Africa	
11. National Biosurveillance Integration System Interagency Working Group, Sub-Working Group on Collaborative Analysis and Production	Johnson C.
12. National Equine Piroplasmiosis Working Group	Bischoff B., James A.
13. National Institute of Mathematical and Biological Synthesis, Tuberculosis Modeling Working Group	Portacci K., Miller R., Farnsworth M.
14. Rift Valley Fever (RVF) Subject Matter Expert Workshop	Brown-Reid M.
15. Alternative Compensation for TB working group. This working group investigates alternative methodologies for TB compensation.	Ott S., Naugle A. (NCAHP)
16. USGS Maximum Entropy/Modeling Working Group	James A., McCool M.
17. Veterinary Epidemiologist Para-Epidemiologist Program	Johnson C.
18. VS 2015 Movement and Marketability Working Group	Johnson C.
19. VS 2015 Surveillance for Action Working Group	Johnson C.
20. VS 2015 Synthesis Group	Bischoff B.
21. VS Live Animal Import Working Group	Akkina J., Kristensen C.

## ARTICLES SUBMITTED, ACCEPTED, AND PUBLISHED

### Submitted

Article	Author(s)
1. CEAH authored " <b>Vector Surveillance Methods</b> ". Chapter included in OIE's <b>Guide for Terrestrial Animal Health Surveillance</b>	CEAH, as an OIE Collaborator, submitted sections on compensation, using models for surveillance and case definitions.
2. Model of Bovine Viral Diarrhea Virus Transmission from Wild Cervids to Cattle in Colorado: Estimation of risk using a stochastic simulation modeling approach	Duncan C.; Hill A.; <b>Miller R.S.</b> ; Van Campen H.; Salman M.D.
3. Endemic rabies in bats: transmission mechanisms allowing for persistence in a highly immune population	George D.S.; Webb C.T.; <b>Farnsworth M.L.</b> ; Smith D.L.; Stanley T.A.; Cryan P.M.; Ellison L.T.; O'Shea T.J.; Bowen R.A.
4. Status of Bovine Tuberculosis in North American Wildlife: A Risk Assessment	<b>Miller R. S.</b> and Sweeney Steven J.
5. Predicting Low Pathogenic Avian Influenza Spatial-temporal Dynamics in Waterfowl in the United States	Webb C. T.; Merton A.; Hoeting J.A.; <b>Miller R.S.</b> ; <b>Farnsworth M.L.</b> ; Swafford S.R.; DeLiberto T. J.; Pederson K.; Franklin A. McLean R.; Wilson K.; Doherty P.
6. Predicting low pathogenic avian influenza prevalence in wild birds in the United States	Webb C.T., Merton A.A.; Hoeting J.A.; <b>Miller R.S.</b> ; <b>Farnsworth M.L.</b> ; Swafford S.R. ; DeLiberto T.J.; Pederson K.; Franklin A.B.; McLean, R.G. ; Wilson K.R.; Doherty P.F.

### Accepted

Article	Author(s)
1. Targeted Surveillance for Highly Pathogenic Avian Influenza in Migratory Waterfowl Across the Conterminous United States Book Chapter in: <i>Avian Influenza: Science, Policy, and Socioeconomic Impact</i> (Majumdar S.K., Brenner F.J., Huffman J., McLean R., Panah A. eds). Pennsylvania Academy of Science. In Press.	<b>Farnsworth M. L.</b> ; Kendall W. L.; Doherty Jr., P.F., <b>Miller R. S.</b> ; White G.C.; Nichols J. D.; Burnham K. P.; Franklin A. B.
2. Heartwater: a threat to domestic and wild ruminants in the continental United States. <i>Journal of the American Veterinary Medical Association</i> . In Press.	Kasari T, R.; <b>Miller R.S.</b> ; <b>James A.M.</b> ; <b>Freier J.E.</b>
3. Evaluation of the fluorescence polarization assay for detection of <i>Brucella abortus</i> antibodies in bison in a natural setting. <i>Comparative Microbiology, Immunology and Infectious Diseases</i> . In Press <a href="http://www.elsevier.com">http://www.elsevier.com</a>	Schumaker B.A.; <b>Corso B.A.</b> ; Rhyan J.C.; Philo L.M.; Salman M.D.; Gardner I.A.

Article	Author(s)
4. Human-bird Interactions in the United States Upland Gamebird Industry and the Potential for Zoonotic Disease Transmission. <i>Vector-Borne and Zoonotic Diseases</i> . In Press.	Slota K. E.; Hill A. E.; Keefe T.J.; Bowen R. A.; <b>Miller R. S.</b> ; Pablonia K. L.

## Published

Article	Author(s)
1. Comparing National and Global Data Collection Systems for Reporting Outbreaks of H5N1 HPAI. <i>Preventive Veterinary Medicine</i> 95(3-4):175-85	<b>Farnsworth M.L.</b> , Hamilton-West C., Fitchett S., Newman S., De La Rocque S., De Simone L., Lubroth J.; Pinto J.
2. A Literature Review of Equine Piroplasmiasis with tick distribution maps and tick life history provided for <i>Boophilus microplus</i> , <i>Amblyomma cajennense</i> , <i>Dermacentor albipictus</i> , <i>dermacentor variabilis</i> , and <i>Anocentor nitens</i> . <a href="http://webdev.aphis.usda.gov/animal_health/emergingissues/diseasenotice/notices.shtml">http://webdev.aphis.usda.gov/animal_health/emergingissues/diseasenotice/notices.shtml</a>	<b>James A. M.</b>
3. Recognition of the threat of <i>Ehrlichia ruminantium</i> infection in domestic and wild ruminants in the continental United States. <i>Journal of the American Veterinary Medical Association</i> . 237(5) 2010.	Kasari T. <b>R.</b> ; <b>Miller R. S.</b> ; <b>James A. M.</b> ; <b>Freier J. E.</b>
4. Bovine Tuberculosis in North American Wildlife: a Continued Risk. <i>One Health Newsletter</i> . Spring, 2010.	<b>Miller R.</b> ; <b>Sweeney S.J.</b>
5. Bovine Tuberculosis in North American Wildlife: A continued risk In: Intrusions and Infectious Disease Emergence. <i>One Health Newsletter</i> (Mary Echols ed). University of Florida. 3(2) 2010.	<b>Miller R. S.</b> ; <b>Sweeney S. J.</b>
6. One Health Approach to Identify Research Needs in Bovine and Human Babesioses. <i>U.S. Research Journal of Parasites &amp; Vectors</i> . 3(36) 2010.	Perez de Leon P., Strickman D.A., Knowles D.P., Fish D., Thacker E., De la Fuent, J., Krause P.J., Wikel S.K., <b>Miller R. S.</b> , et al.
7. Review of Human-Animal Medicine: Clinical Approaches to Zoonoses, Toxicants and Other Shared Health Risk. <i>Journal of the American Veterinary Medical Association (JAVMA)</i> , 2010; 236:1304-1305.	<b>Portacci K.A.</b>
8. North American Livestock Trade Flows. <i>Livestock Marketing Information Center, Analysis and Comments Letter #13</i> , April 2010.	Rosa E; <b>Stone K.</b> ; <b>Johnson K.</b>

## CAHIA VALUES AND GUIDING PRINCIPLES

We own the responsibility to protect American animal agriculture. We know professionalism is essential. We all have values and experiences that we bring to any effort. We nurture an environment which employees are people first and workers second. We are all exceptional individuals, continuously working as a community toward the same goals and expectations, which include:

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### Diversity

- We strive to embrace diversity in all its forms (race, color, religion, national origin, age, sex, sexual orientation, disability, marital or familial status, political beliefs, parental status, receipt of public assistance, or protected genetic information).
- We rely on the innovative potential of a diverse workforce.
- All employees have a right to a workplace that is free of harassment and discrimination.

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### Communications

- We practice communication that flows freely in all directions, is thoughtful, respectful, truthful, timely, and tactful.
- We communicate clearly, concisely, openly, and honestly, using positive words.
- We enhance trust by encouraging and providing complete information, feedback, and follow-up.
- We respond to all requests in a timely manner.

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### Respect

- We are respected and we respect others.
- All people are treated with dignity.
- We exhibit character traits of honesty, integrity, and trust.
- We respect the varying working styles, education, position, and life experiences of individuals, and all employees have a point of view and a right to contribute.
- We appreciate individuals by fostering confidence and pride in their achievements and by acknowledging their accomplishments.
- We value resources and use them with integrity and fiscal responsibility. Our resources include the environment, government property and funds, people, and time.
- We practice courteous workplace behavior and honor each other's needs for a professional and respectful workplace environment.

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### Accountability

- We believe every person is accountable to themselves and each other for taking ownership of decisions and actions, and for learning from every outcome.
- We are responsible for doing our best in all aspects of our work.
- We honor our commitments to each other and our customers.
- We understand our work expectations, roles, and responsibilities, and performance standards define accountability for our work.

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## Collaboration and Teamwork

- We depend on every individual to contribute.
- We value the expertise and desire of employees to do a great job, and allow them to do it.
- We value and encourage activities that foster teamwork, fun, and working relationships.
- We celebrate individuals and teams in a meaningful way.
- We apply a multidisciplinary approach to risk analysis, valuing the varied expertise of our team.

Respect is a dynamic interaction; we lead by example. Individuals are equally responsible for their behavior, work environment, and ability to communicate solutions. Collaboration is realizing you don't have to do the job by yourself. Everyone has the ability to help another succeed. We care enough about our organization and our work to expend the effort to approach each other with compassion and purpose to reach our goals and expectations. We commit to reviewing these values and guiding principles annually.

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