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Animal and Plant Health Inspection Service

Veterinary Services

United States National Animal Health Surveillance System: 2017 Surveillance Activity Report

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Overview of the National Animal Health Surveillance System

This document is the annual surveillance report of the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Veterinary Services (VS) National Animal Health Surveillance System (NAHSS) for calendar year 2017. The NAHSS is a system created to detect animal health events and trends for all stakeholders involved in public, animal, and environmental health. VS is implementing a comprehensive and integrated surveillance (CIS) approach within the NAHSS to provide a dynamic knowledge base for actions designed to improve animal health, productivity, marketability, and product safety in an efficient and integrated way. The NAHSS is an interdisciplinary network of partners working together to protect animal health and promote trade through surveillance, control, and prevention of foreign, emerging, zoonotic, and endemic diseases. The NAHSS infrastructure also provides the tools necessary to detect chemical or environmental agents that could affect animal health.

The NAHSS has multiple functioning elements that include field operational resources; a veterinary diagnostic laboratory network, including the National Animal Health Laboratory Network (NAHLN); well-developed data and sample collection resources; a data storage and management system; and analytic and reporting tools with the expertise to convert raw data into information for decision-making. NAHSS includes passive and active surveillance for reportable diseases, including those reported to the World Organization for Animal Health (OIE) as well as those diseases covered by federally funded surveillance programs. In addition, the surveillance system includes monitoring for diseases that States are not mandated to report.

The National Animal Health Reporting System (NAHRS) is an important component of the NAHSS. The NAHRS program is designed to provide summary-level data on the presence of diseases on the National List of Reportable Animal Diseases (NLRAD) in the United States. NAHRS gathers monthly data from participating State animal health officials (SAHOs) on the presence of NLRAD-listed diseases that were identified with a high level of certainty (Appendix 1.) The U.S. meets its OIE reporting obligations using a variety of sources including NAHRS reporting, foreign animal disease (FAD) reports, national program disease surveillance reports, and others.

This annual report includes a summary of selected federally supported active and passive surveillance activities in calendar year 2017, as well as a summary of NAHRS reporting by participating States. This document also includes an overview of the OIE and U.S. reporting to the OIE in 2017. In addition, we include the 2017 NLRAD (Appendix 1) as well as the U.S. status of OIE-listed diseases for calendar year 2017 (Appendix 2).

Selected Active and Passive Surveillance Activities in 2017

The following selected reports are summarized from various surveillance programs and activities conducted by APHIS and partners during 2017. We indicate whether the surveillance data in each section reflect the fiscal year (October 1, 2016, through September 30, 2017), or calendar year (January 1 through December 31, 2017).

The Comprehensive and Integrated Surveillance (CIS) approach is a natural progression from data compiled from historical disease eradication programs to a flexible, responsive, and cost-efficient surveillance system. This approach is not based on a specific disease, but is designed around the fundamental components of surveillance. It can be adapted to all species as well as the evolving animal health issues that APHIS, States, and animal industries face. These include diseases not currently present in the United States, zoonotic diseases of public health concern, emerging diseases that threaten our industries and economy, diseases that are introduced with malicious intent, and selected endemic disease conditions of high economic impact.

Avian Influenza (AI) Surveillance

APHIS' AI surveillance program addresses the following poultry populations:

- Large-volume commercial poultry industry
- Small-volume, high-value commercial poultry industry
- Live-bird marketing system
- Backyard flocks

The program also includes non-poultry avian populations, including wild, migratory birds and zoo or exhibition birds. For more information on AI surveillance, look here.

North American lineage H7N9 low pathogenicity avian influenza (LPAI), unrelated to Asia H7N9 viruses, caused outbreaks in poultry in Alabama, Georgia, Kentucky, and Tennessee during March 2017. In addition, a single mutation event to highly pathogenic avian influenza (HPAI) affected two premises in Tennessee.[1] Also during March 2017, H5N2 LPAI was detected in commercial turkeys in Wisconsin, and in April 2017, an unrelated H5N2 LPAI virus was detected in a single backyard flock in Idaho. Although the goose/Guangdong lineage H5 clade 2.3.4.4 viruses continued to circulate globally and significantly impacted Europe, Africa, and Asia, the AI viruses identified from U.S. poultry during October 2016-September 2017 arise from North American lineage with no evidence of the Eurasian H5 lineage gene segments. There were no further detections in 2017 of the Eurasian H5 in poultry in the U.S. and no reports of the Eurasian-North American reassortant H5N2 virus outside the U.S.

Commercial Poultry – Surveillance for AI in commercial poultry is described under provisions of the National H5 and H7 LPAI Control Program of the National Poultry Improvement Plan (NPIP), which was implemented in September 2006. Forty-nine States and one U.S. Territory participated in NPIP AI surveillance in FY 2017, conducting a total of 1.9 million tests for AI. Testing is conducted by approved laboratories at the State level and non-negative samples are forwarded to VS' National Veterinary Services Laboratories (NVSL) for confirmation.

Live Bird Marketing System, Upland Game, Backyard Birds and Exhibition Birds – The uniform standards for testing in the live bird marketing system were implemented as a State-Federal-industry cooperative program in 2004 for the prevention and control of H5 and H7. During FY 2017, nearly 142,000 tests for avian influenza were performed from birds in 37 States. Testing is conducted by approved laboratories at the State level and non-negative samples are forwarded to NVSL for confirmation.

There were two North American lineage H5/H7 events: active surveillance activities resulted in the detection of H5N2 LPAI in a mallard duck from a backyard flock in Idaho with no further spread, and the detection of North

[1] https://www.aphis.usda.gov/animal_health/animal_dis_spec/poultry/downloads/epi-ai.pdf

American H7N9 LPAI affected backyard poultry from Alabama, Kentucky, and Tennessee during the H7N9 outbreak in March 2017. Antibody to H7 was detected in backyard chickens from Pennsylvania during routine active surveillance; however, all follow-up testing was negative (no virus).

An H2N2 virus first detected in late 2014 continues to circulate in Northeastern live bird markets. Ongoing circulation of this virus is concerning due to the potential for poultry adaptation and reassortment where other AI viruses are present. The virus has been recovered from ducks, gallinaceous birds, and the environment in four States (Connecticut, New Jersey, New York, and Pennsylvania), most commonly from Muscovy ducks in New York. Other viruses recovered include an H3N2 from a duck in Pennsylvania, H6N2 from chickens in Florida, H9N2 from chickens in Pennsylvania with active surveillance. Antibody to H1 was detected in New Jersey, Pennsylvania, and New York backyards. H6 antibody was detected in Massachusetts and New Jersey backyards, and H9 antibody in California game birds; follow-up testing for virus was negative in all cases via active surveillance.

Wild Birds – In July 2015, State and Federal agencies initiated a national wild bird surveillance effort to provide information to guide management actions addressing some of the issues associated with HPAI virus in birds. This includes risks to commercial poultry, backyard poultry, game bird farms, wild birds, wild bird rehabilitation facilities, falconry birds, and captive bird collections in zoos/aviaries. Specific objectives of the plan were to: 1) determine the distribution of influenza viruses of interest in the U.S.; 2) detect spread of influenzas of interest to new areas of concern; and 3) provide a flexible surveillance framework that can be modified to monitor wild waterfowl populations for avian influenza, detect reassortant avian influenza viruses, and estimate apparent prevalence of important influenzas once detected in an area of concern. In FY 2017, a total of 34,506 wild bird samples were collected and tested for avian influenza. Of these, H5/H7 virus was recovered and/or characterized from 77 samples across 23 States, with only one confirmed HPAI Eurasian-North American H5N2 positive mallard sampled in December 2016 in Montana.[1]

For more information on avian influenza testing in poultry and wild birds, see the proceedings of the 2017 USAHA Annual Meeting at http://www.usaha.org/.

Bovine and Farmed Cervid Surveillance

Bluetongue and Epizootic Hemorrhagic Disease (EHD) Surveillance

Bluetongue virus (BTV) and epizootic hemorrhagic disease virus (EHDV) are members of the *Reoviridae* family and are transmitted by biting *Culicoides* midges. Worldwide, 24 bluetongue serotypes have been identified and in the United States, bluetongue virus types 2, 10, 11, 13, and 17 are considered endemic. Of the endemic types, BTV-2 is restricted primarily to Florida and the other types are more widespread. In recent years, NVSL has identified 10 previously unrecognized bluetongue serotypes from U.S. ruminant species (BTV types 1, 3, 5, 6, 9, 12, 14, 19, 22, 24). None of the non-endemic bluetongue types has caused widespread disease outbreaks. The types of *Culicoides spp.* vectors responsible for transmission of the non-endemic types are unknown.

In the United States, EHD is one of the most significant infectious diseases of white-tailed deer, whereas infection in cattle has been primarily subclinical or rarely resulting in mild disease. In recent years, though, there have been multiple cases of EHDV causing severe disease in cattle herds and other species.

Summary of BTV Isolates Identified by NVSL – In CY 2017, NVSL identified BTV serotypes 11, 13, and 17 in diagnostic submissions from sheep; APHIS does not conduct routine BTV surveillance. Data from other laboratories are not presented here.

[1] https://www.aphis.usda.gov/animal_health/downloads/animal_diseases/ai/uspositivecases17.pdf

Summary of EHDV Isolates Identified by NVSL – In CY 2017, no samples were found positive for EHDV in diagnostic submissions submitted to NVSL; APHIS does not conduct routine EHDV surveillance. Data from other laboratories are not presented here.

Bovine Spongiform Encephalopathy (BSE) Surveillance

In FY 2017, APHIS tested 24,229 samples for BSE under the ongoing surveillance program. Figure 1 summarizes the U.S. BSE OIE points from 2011-2017. The primary purposes of the program are to continue monitoring and assessing changes to the BSE status of U.S. cattle and to provide mechanisms for early detection of BSE. The program enables USDA to detect BSE at a rate of one infected animal per 1 million adult cattle with 95 percent confidence, exceeding international standards. The program emphasizes sample collection from cattle subpopulations where BSE is most likely to be detected. Currently, the OIE categorizes countries as either negligible risk, controlled risk, or undetermined risk for BSE. For live cattle and for many products derived from cattle, the trade conditions recommended by the OIE guidelines are based on the BSE risk classification of the exporting country. In May 2013, the OIE upgraded the BSE status of the United States from BSE controlled-risk status to BSE negligible-risk status. This upgrade provides the U.S. cattle industry a major economic benefit via greater access to international markets. The BSE status upgrade also decreased the level of surveillance required by the OIE from Type A to Type B surveillance (Figure 1).

Other notable changes to the BSE program have occurred. Beginning in FY 2015, APHIS discontinued testing animals under 12 months of age. In FY 2016, the BSE surveillance program reduced the targeted number of samples collected from approximately 40,000 to 25,000, while still exceeding the OIE point goals. APHIS made changes to improve the geographic representativeness of sampled cattle in FY 2018. For more about the BSE surveillance system, see https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/cattle-disease-information/bse-surveillance/cattle-surveillance

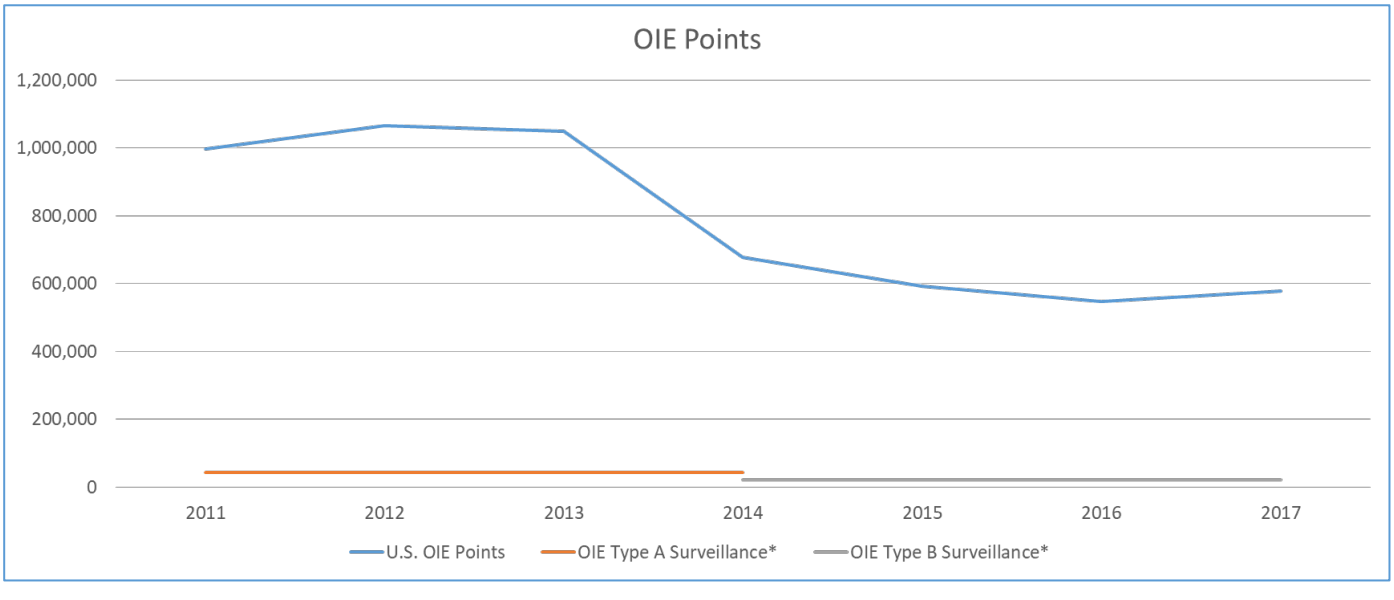

Figure 1. Comparison of the number of BSE OIE points accumulated by the U.S. to the number of OIE points required for OIE Type A and Type B surveillance, 2011-2017

* OIE Type A Surveillance requires 300,000 points over a 7-year period (42,857 points per year) with surveillance designed to detect prevalence of 1 infected animal per 100,000 adult cattle at a 95 percent confidence level. OIE Type B Surveillance requires 150,000 points over a 7-year period (21,429 points per year) with surveillance designed to detect prevalence of 1 infected animal per 50,000 adult cattle at a 95 percent confidence level.

Brucellosis Surveillance in Cattle and Bison

The U.S. Cooperative State-Federal Brucellosis Program has been highly successful in eradicating bovine brucellosis from our domestic cattle and bison herds. All 50 States have been Class Free for bovine brucellosis since July 2009, despite recent detections in the Greater Yellowstone Area (GYA) States of Idaho, Montana, and Wyoming. The GYA

remains our primary focus for brucellosis in livestock because the disease is endemic in GYA wild elk and bison.

In FY 2017, brucellosis was newly detected in two livestock herds in Montana via active surveillance in November 2016 and August 2017.[1] The November 2016 herd had a third whole herd test in September 2017 with one non-negative scheduled for retest in October 2017. The August 2017 herd was scheduled for a partial herd test in December 2017. One privately owned livestock herd in Montana, detected in 2010, remained under quarantine. In Wyoming, an affected cattle herd, detected in November 2015, underwent whole-herd tests in December 2016, February 2017, and an after-calving whole-herd test in May 2017. All the animals tested negative in the May 2017 test. The quarantine was released June 2, 2017. An assurance test was scheduled for fall 2017. A Wyoming affected bison herd detected in November 2010, which came out of quarantine in November 2015, was negative on assurance test in January 2017. Both herds were located within their respective State's designated surveillance area.

The National Brucellosis Slaughter Surveillance Program is designed to detect brucellosis infection with 95 percent confidence that the prevalence level of brucellosis does not exceed one infected animal per 100,000 animals. This level is higher than required by OIE standards. In FY 2017, approximately 1.9 million brucellosis tests were conducted under this program. Just over 400,000 live-animal tests were performed through livestock markets and on-farm testing. In 2017, approximately 4 million calves and 25,687 adult cattle were vaccinated for brucellosis and 403 herds were certified as brucellosis certified-free cattle herds. For more information on brucellosis surveillance, see https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/cattle-disease-information/bse-surveillance/cattle-surveillance

Tuberculosis (TB) Surveillance in Cattle and Cervids

Seven TB-affected beef and three TB-affected dairy herds were detected during FY 2017. Four herds were located in Michigan, three in South Dakota, two in New Mexico, and one in Indiana. Four of the TB-affected herds were detected as a result of area active surveillance, four herds were detected through epidemiological investigation, and two herds were detected through slaughter surveillance. An affected dairy complex detected in 2015 via slaughter surveillance continued a test-and-remove program for elimination of TB in the herd. In addition to cattle surveillance, 12,588 cervids were serologically tested and 4,427 were skin tested for TB in FY 2017 and no cervids were confirmed positive for *Mycobacterium bovis.* For more information on TB surveillance, see https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/cattle-disease-information/bse-surveillance/cattle-surveillance

Voluntary Chronic Wasting Disease (CWD) Herd Certification Program

The APHIS National CWD Herd Certification Program (HCP) was implemented in 2014. It is a voluntary Federal-State-industry cooperative program administered by APHIS and implemented by participating States. The program provides uniform national herd certification standards that minimize the risk of spreading CWD in farmed cervid populations. Participating States and herd owners must comply with requirements for animal identification, fencing, recordkeeping, inspections/inventories, as well as animal mortality testing and response to any CWD-exposed, suspect, and positive herds. APHIS monitors the approved State HCPs to ensure consistency with Federal standards through annual reporting by the States.

With each year of surveillance without detecting positive animals, herds participating in the HCP will advance in status until reaching 5 years with no evidence of CWD, at which time herds are certified as being low-risk for CWD. Only captive cervids from enrolled herds certified as low-risk for CWD may move interstate. Currently, 28 States participate in the voluntary CWD Herd Certification Program and have approved HCPs. FY 2017 marks the fifth year that approved States have submitted their CWD HCP annual reports to APHIS. In FY 2017, there were 2,517 enrolled

[1] A recently implemented Montana State statute prevents public disclosure of herd type.

cervidae herds: 1,922 deer, 443 elk, and 162 mixed-species herds. Of those, there were 2,103 certified cervidae herds: 1,646 deer, 364 elk, and 93 mixed-species herds. A total of 10,037 captive cervids were tested for CWD as part of the voluntary HCP in FY 2017.

For more information on CWD surveillance, see https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/cervid/cervids-cwd/cervid-cwd

Cattle Fever Tick Surveillance

The Cattle Fever Tick Eradication Program (CFTEP) was created in 1906 to eliminate bovine babesiosis—a severe and often fatal cattle disease—from the U.S. cattle population. The cattle tick (*Rhipicephalus annulatus*) and the tropical cattle tick (*R. microplus*) are carriers of the protozoan parasites (*Babesia bigemina* and *B. bovis*) that cause babesiosis. These ticks are well established in Mexico. A permanent, 500-mile quarantine zone along the Texas-Mexico border was created in 1938 to maintain the Nation's status as free from babesiosis and cattle fever tick (CFT). The disease and the ticks were officially eradicated from the continental United States in 1943, with the exception of a narrow permanent quarantine "buffer" zone in south Texas that follows the Rio Grande River. This zone is also known as the "systematic quarantine zone" because cattle with ticks on quarantined premises must be systematically treated every 7 to 14 days for 6 to 9 months.

The CFTEP is a cooperative program between APHIS and the Texas Animal Health Commission (TAHC). The TAHC provides support personnel and conducts surveillance in tick-free areas of Texas. APHIS leads the program and maintains the permanent quarantine zone through surveillance and tick control activities. APHIS' mounted patrol inspectors, known as "tick riders," patrol designated sections to intercept tick-carrying wildlife and stray and smuggled Mexican-origin livestock. Intercepted animals must be quarantined, inspected, and treated.

In FY 2017, APHIS conducted 15,136 inspections of individual premises for ticks, including 2,559 river trail patrols. Also in FY 2017, APHIS identified 63 newly infested premises inside the buffer zone, 21 more than in FY 2016. There were 102 newly affected premises at the end of FY 2017 outside the border – 58 more than in FY 2016. In addition, 14 of 23 stray cattle captured along the border were infested with CFT, and 2 of the 12 stray horses/mules were infested.

A defined quarantine area that includes affected premises is established when infected premises are identified. To release a quarantine area, every infested premises must have all cattle treated for at least 9 months, including inspections and treatments every 2 weeks. As a result, APHIS conducted 143,152 individual animal inspections and 91,181 treatments throughout South Texas. In FY 2017, the quarantine buffer zone and the free area of Texas contained 165 newly quarantined premises, compared to 86 in FY 2016.

In October 2014, the TAHC and APHIS confirmed the presence of CFT on Cameron County premises located outside of the permanent quarantine zone. To protect the land, premises, and animals from exposure to CFT, the TAHC created a temporary preventative quarantine area (TPQA) in Cameron County. Surveillance efforts have been ongoing since the TPQA went into effect. The TPQA originally started with six new premises located outside the permanent quarantine zone. In FY 2017, there were 28 infested premises identified in the TPQA, consisting of approximately 223,000 acres. In addition, APHIS is working with the TAHC, the USDA Agricultural Research Service (ARS), and a veterinary pharmaceutical company to evaluate an anti-tick vaccine for cattle within the permanent quarantine buffer zone in South Texas, with plans to expand to a larger population. For more information on cattle fever tick surveillance, see https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/cattle-disease-information/bse-surveillance/cattle-surveillance

Swine Surveillance

Brucellosis Surveillance in Swine

In FY 2017, all 50 States and U.S. territories maintained their free status for swine brucellosis in commercial production swine[1]. The Federal VS Laboratory in Kentucky tested 168,039 cull sow/boar slaughter samples and 2,955 feral swine samples for swine brucellosis. Although APHIS did not identify any commercial production swine herds infected with swine brucellosis, feral swine remain a reservoir of brucellosis (7 percent of feral swine tested positive for swine brucellosis exposure) and animal health officials may continue to identify brucellosis in non-biosecure herds with exposure to feral swine. Biosecurity measures remain vital in preventing or minimizing contact with feral swine.

Classical Swine Fever (CSF) Surveillance

In FY 2017, 12 approved NAHLN laboratories and the NVSL Foreign Animal Disease Diagnostic Laboratory conducted CSF surveillance testing on 11,688 specimens as part of our CSF active surveillance system activities. APHIS confirmed all surveillance specimens as negative. APHIS also conducted two swine FAD investigations for suspected CSF cases and confirmed both herds as negative after testing. Table 1 lists the number of tested animals and surveillance streams for CSF testing in FY 2017. Additional information about the CSF surveillance program is available on the APHIS Web site at: https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/swine-disease-information/classic-swine-fever/classic-swine-fever

Table 1. Number of animals tested under the national CSF surveillance plan for FY 2017

Surveillance Stream	Number of Tested Animals
Sick pig specimens submitted to veterinary diagnostic laboratories	2,374
Slaughter swine with high probability of CSF exposure	1,843
Feral swine	3,005
Swine with high probability of CSF exposure [1]	4,441
Swine with low probability of CSF exposure[2]	…
FAD submissions tested for CSF	5

[1] Waste feeders and populations from States with high probability of CSF exposure

[2] Populations from States with low probability of CSF exposure

Influenza A Virus in Swine (IAV-S) Surveillance

APHIS completed almost 9 years of cooperative IAV surveillance including 2017. Standard epidemiologic measures do not apply to the surveillance data collected as the program continues to be voluntary; however, data may indicate trends in influenza isolate patterns. The program's focus is to acquire isolates of the influenza A viruses that are circulating in the U.S. swine herd to 1) better evaluate changes in these viruses over time through genetic sequencing, and 2) provide viruses for research and biologic updates. Modifications to the program testing policies in June 2016 have increased program efficiencies. As a result of the modifications, the number of overall accessions that qualify for APHIS-supported testing have decreased in FY 2017 as expected; however, the monthly percentage of accessions that yield a virus now approaches 90 percent, up from 50 percent in previous years (Figure 2).

[1] The term "Commercial production swine" is defined in the Pseudorabies Program Standards.

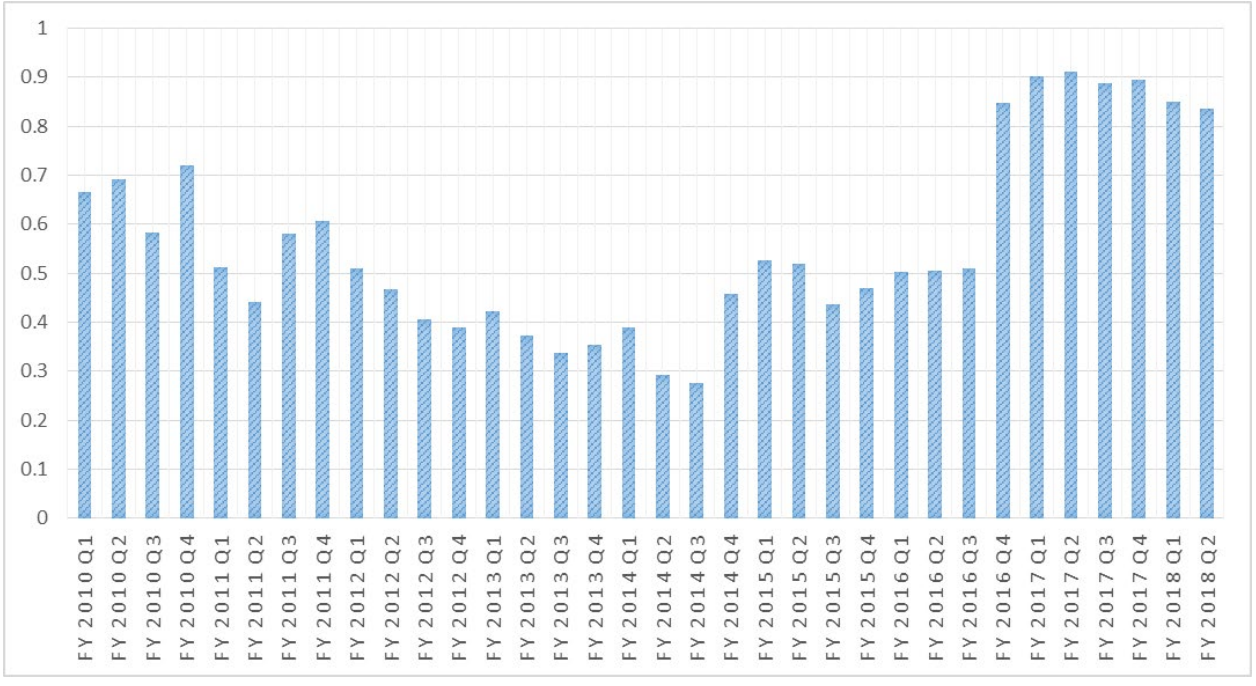

Figure 2. Percentage of IAV-S accessions that yielded a virus by fiscal year and quarter, FY 2010-FY 2017

NAHLN laboratories submit the sequencing results for the HA and NA genes of virus isolates into GenBank,® the National Institutes of Health genetic sequence database that is publically available. APHIS collaborates with USDA-ARS at the National Animal Disease Center in Ames, IA, for phylogenetic analysis of the IAV-S sequence data. This analysis provides information on the evolution and variation in genetic diversity of IAV over time in swine and allows for inferences on population and/or vaccine immunity. ARS and NVSL also collaborate to choose approximately 20 viruses a month for whole genomic sequencing and enter the sequencing data into GenBank®. Genbank® data can yield information needed for vaccine and diagnostics decision-making and contribute to the analysis for possible zoonotic threats.

In FY 2017, APHIS provided support to test 20,246 samples from 6,657 accessions for the IAV-S surveillance activities. Circulating subtypes identified through the surveillance in FY 2017 included H1N1, H1N2, and H3N2. The predominant subtypes were H1N1 and H1N2. The most frequently detected FY 2017 virus constellations were H1-gamma/N1-Classical, H3-Human-like 2010/N2-2002, H1-delta 1a/N2-2002, and H1-delta 2/N2-1998. A novel H3N2 human-to-swine spillover (human-to-swine-2016) was detected in 6 of 195 H3 isolates in FY 2017. Figure 3 shows the HA/NA phylogenetic clade pairings for the last 2 years of surveillance data.

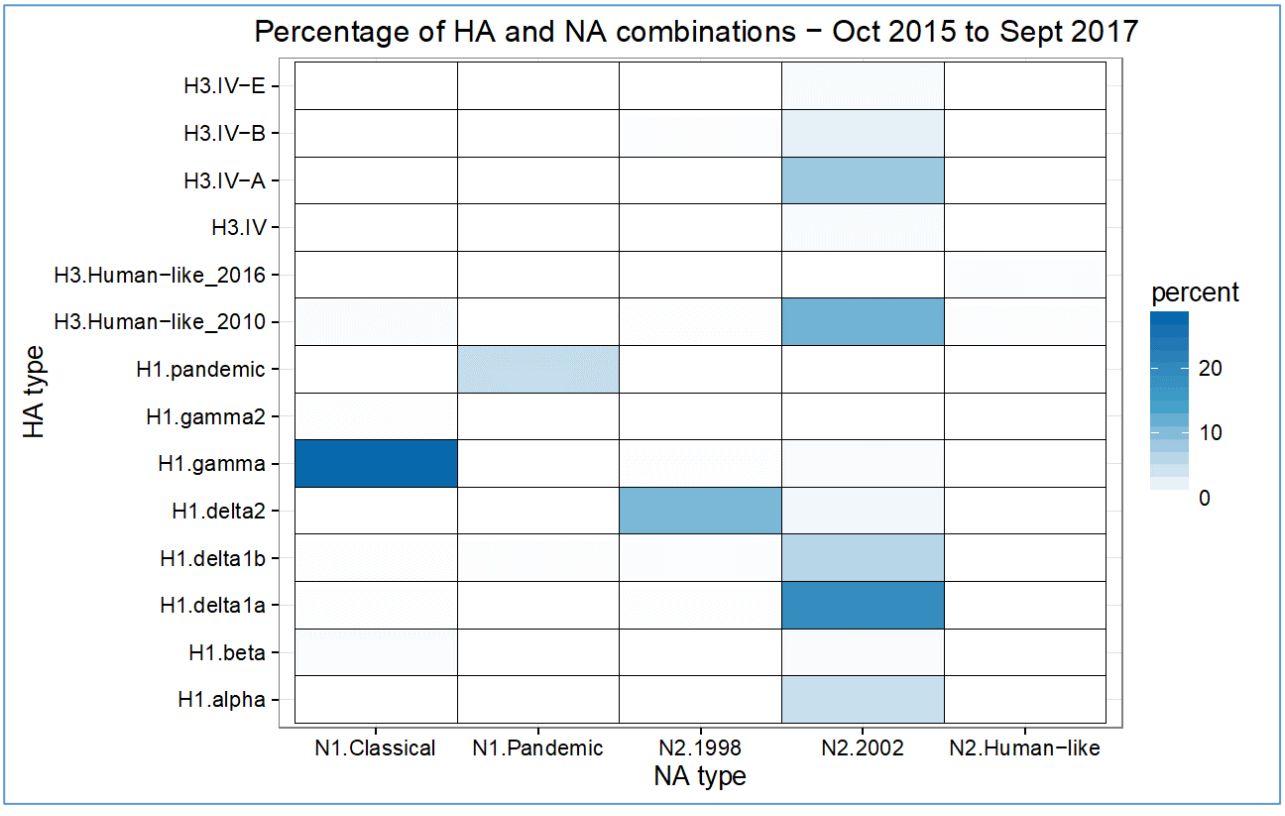

Figure 3. HA/NA phylogenetic clade pairings for FY 2016- 2017

APHIS posts IAV-S surveillance reports on the web at https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/swine-disease-information/influenza-a-virus

Pseudorabies Virus (PRV) Surveillance

FY 2017 was the eighth full year of national PRV surveillance. Fifteen NAHLN laboratories, the Federal VS Laboratory in Kentucky, and NVSL in total tested 196,538 samples. NVSL performed confirmatory testing on any non-negative test results and swine health staff reported all positive screening assay results to VS field staff for investigation. APHIS did not find any commercial herds to be positive for PRV in FY 2017. Table 2 lists the number of swine tested for PRV from the various surveillance streams or populations in FY 2017. Additional information about the PRV surveillance program is available at https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/swine-disease-information/swine-pseudorabies/swine-pseudorabies

Table 2. Number of swine tested in each PRV targeted surveillance population in FY 2015, FY 2016, and FY 2017

Surveillance stream / Targeted population	Number of swine tested FY 2015	Number of swine tested FY 2016	Number of swine tested FY 2017
Diagnostic laboratory serologic submissions:			
Sick pig submissions	595	231	193
Routine serology/herd profiling	22,267	18,848	18,460
Swine with high probability of feral swine exposure	4,208	5,882	5,859
Swine with known feral swine exposure	591	620	617

Surveillance stream / Targeted population	Number of swine tested FY 2015	Number of swine tested FY 2016	Number of swine tested FY 2017
Total – Diagnostic laboratory serologic submissions	32,426	26,010	25,520
Cull sow-boars at slaughter	234,915	169,071	168,039
Market swine at slaughter	9,311	2,316	-
Feral swine	3,063	2,986	2,979
Swine cases highly suspicious for PRV	0	0	0
TOTAL	**248,613**	**200,383**	**196,538**

Swine Enteric Coronavirus Disease (SECD)

Porcine epidemic diarrhea virus (PEDv) has spread widely within the swine industry since the coronaviruses were first detected in the United States in 2013. In early 2014, an additional related virus, porcine delta coronavirus (PDCoV), appeared in this country. Infections with these novel SECD viruses can cause significant morbidity and mortality, particularly in young piglets.

In response to the large number of SECD cases that were affecting the U.S. swine industry, USDA issued a Federal Order in June 2014, making SECD a reportable disease. At the same time, USDA made emergency funds available to cover specific costs associated with the disease. USDA issued a revised Federal Order on January 4, 2016, for the effective use of the remaining emergency funding. On March 6, 2018, USDA rescinded the Federal Order that required reporting of SECD cases. APHIS issued the last weekly SECD weekly situation report on March 8, 2018.

Feral Swine Surveillance

Feral swine *(Sus scrofa)* are a harmful and destructive invasive species. Their geographic range and population numbers are increasing in the United States. Though exotic to North America, feral swine have become widely distributed through accidental releases of domesticated pigs and Eurasian wild boars that escape from shooter operations or alleged illegal transport and release of feral swine within and between States for hunting.

Nationwide, feral swine cause an estimated $1.5 billion in property and agricultural damage annually, and this number is growing. These wild pigs destroy crops and erode soils through their rooting, wallowing, and consumption activities. Feral swine also prey on native mammals, young domestic livestock, and birds. Feral swine compete with wildlife and livestock for food and contaminate fields and streams with *Escherichia coli* and other bacteria. They also carry more than 30 bacterial and viral pathogens in addition to numerous parasites that can affect people, pets, other farm animals, and wildlife. Because feral swine are susceptible to several foreign animal diseases, they could play a key role in spreading these diseases should they enter the United States.

Currently, feral swine have been reported or are believed to exist in at least 38 States as well as in parts of Canada and Mexico. The estimated feral pig population in the United States is more than 5 million and expanding. Range expansion over the last few decades is due to a variety of factors including their adaptability to a variety of climates and conditions, translocation by humans, and a lack of natural predators. Additional information on the location of feral swine in the United States can be found at the Southeastern Cooperative Wildlife Disease Study (SCWDS) website: http://swine.vet.uga.edu/nfsms/information/map2016.htm

In 2014, in response to the increasing damage and disease threats posed by expanding feral swine populations in the United States, Congress appropriated money for APHIS to create a collaborative, national feral swine damage

management program. The overarching goal of the APHIS National Feral Swine Damage Management Program is to protect agricultural and natural resources, property, animal health, and human health and safety by managing damage caused by feral swine in the United States and its territories. Additional information about this program can be found here: https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/operational-activities/feral-swine/feral-swine-program

As part of this program, APHIS Wildlife Services, in collaboration with VS, annually samples feral pigs in the United States for several diseases. In FY 2017, Wildlife Services tested 3,005 feral swine samples from 33 States for CSF, 2,979 feral swine samples from 32 States for PRV, and 2,955 samples from 32 States for swine brucellosis. None of the sampled pigs were positive for CSF. However, 18.1 percent of the pigs tested positive for pseudorabies exposure and 7.0 percent for swine brucellosis exposure.

For more information on swine surveillance, see https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/swine-disease-information

Equine Surveillance

Equine Arbovirus Surveillance and Web Reporting

APHIS publishes biweekly updates on the number of equine cases of West Nile virus (WNV) and eastern and western equine encephalitis (EEE and WEE) during the arbovirus transmission season, which runs approximately from June through November. Equine arbovirus case reporting is carried out through collaboration with the Centers for Disease Control and Prevention (CDC) and State veterinary and public health officials. CDC provides arbovirus case information through its ArboNET reporting system, an electronic surveillance and reporting system used to track and report arboviral activity. Biweekly updates and veterinary case definitions for WNV and EEE/WEE are published online at http://www.aphis.usda.gov/animal-health/equine-health

West Nile Virus – In CY 2017, 39 U.S. States reported 307 equine cases of WNV. The most cases were reported by Utah (35), Wisconsin, (24), and California (21). The 307 reported equine cases of WNV were lower than the 380 reported in 2016 (Figure 4).

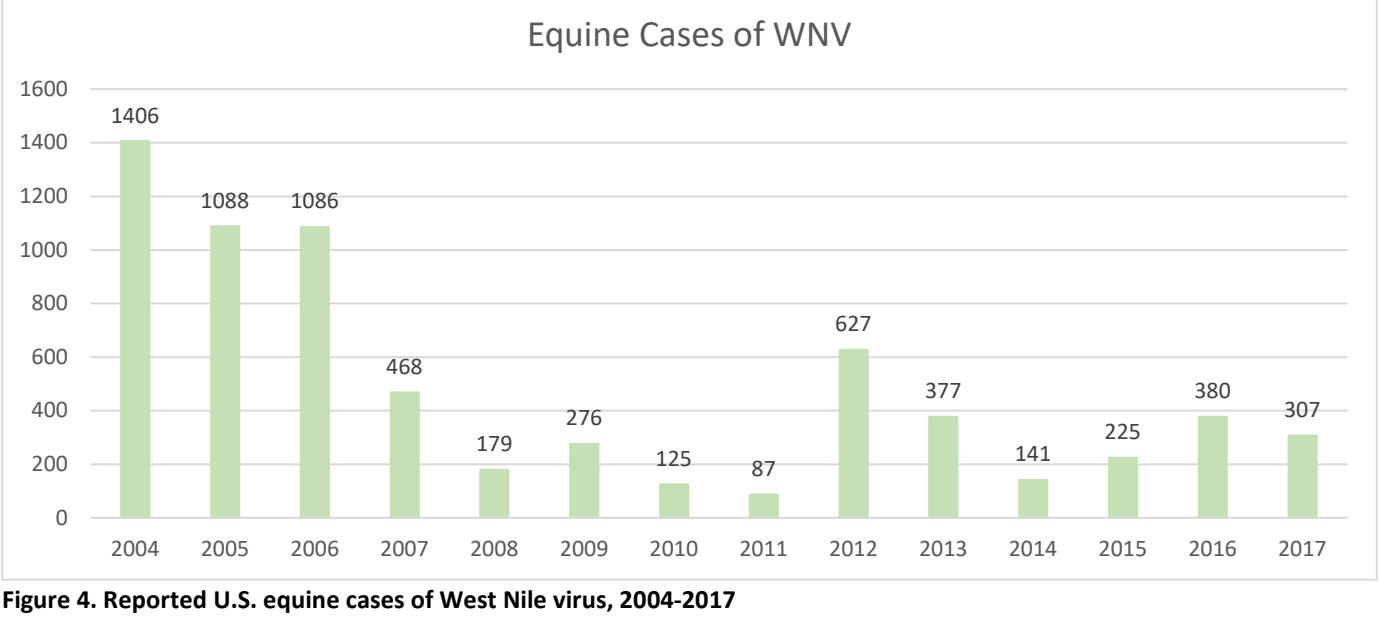

Figure 4. Reported U.S. equine cases of West Nile virus, 2004-2017

Eastern Equine Encephalitis – In CY 2017, 13 U.S. States reported 86 equine cases of EEE. This count was lower than 118 reported cases in 2016 (Figure 5). Wisconsin reported the most cases with 24, followed by Mississippi (9) and South Carolina (9).

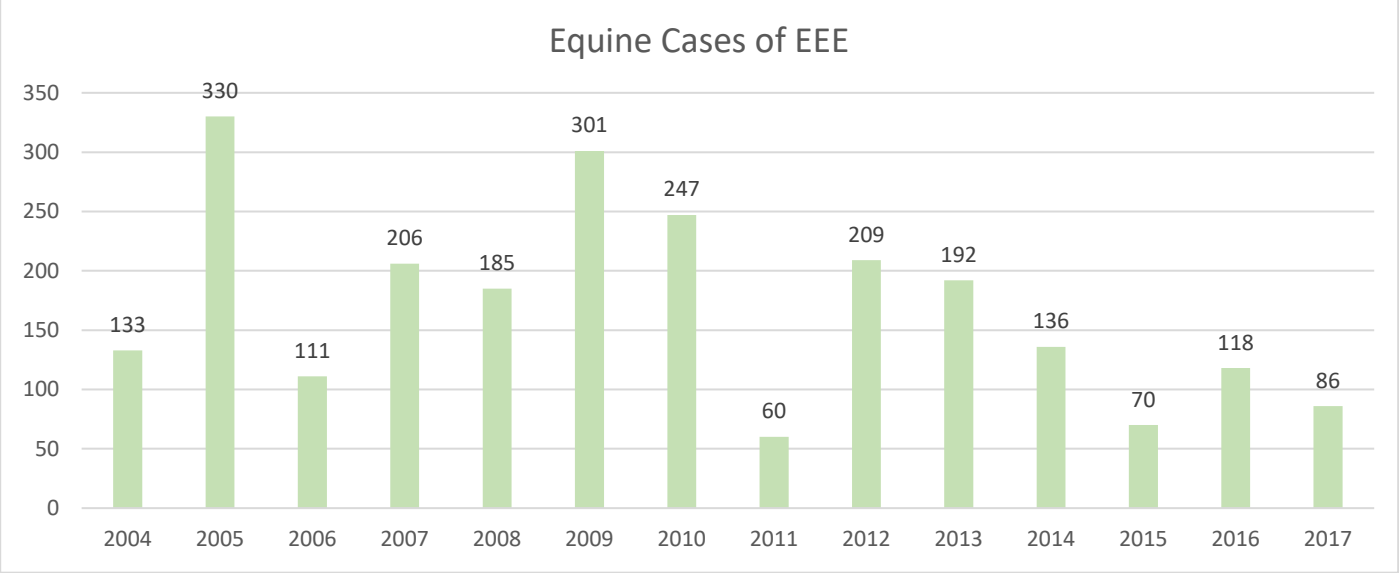

Figure 5. Reported U.S. equine cases of Eastern equine encephalitis, 2004-2017

Equine Piroplasmosis

Since November 2009, more than 352,495 domestic U.S. horses have been tested for equine piroplasmosis (EP) through active surveillance and movement testing. A total of 398 EP-positive horses (388 *Theileria equi*-positive, 10 *Babesia caballi*-positive) have been identified through this surveillance. These positive horses are unrelated to the 2009-2010 *T.equi* outbreak on a Texas ranch where 413 positive horses were identified in connection with the outbreak and natural tick-borne transmission. The disease occurrence on the ranch was documented to have occurred over at least 20 years and has since been eradicated. Of the 398 positive horses identified through active surveillance since 2009, 344 were Quarter Horse racehorses, 14 were Thoroughbred racehorses, 33 were horses previously imported to the United States before August 2005 under the complement fixation test, and 7 were categorized as "other." The epidemiology investigations conducted in all of these cases have indicated no evidence of tick-borne transmission and the cases in racehorses specifically have involved iatrogenic transmission (needle/syringe/IV equipment reuse, blood transfusions, contamination of multi-use drug vials, etc.) as the method of spread.

In FY 2017, a total of 33,101 domestic U.S. horses were tested for EP with 57 horses identified as positive for *T. equi.* Fifty-four were Quarter Horse racehorses, two were horses illegally moved from Mexico, and one was a horse imported to the U.S. prior to 2005, when the complement fixation test was still being used as the official import test; this test is now known to have been inadequate to identify chronically infected horses. The Quarter Horse racehorses were participating in sanctioned racing, unsanctioned racing, or both—and one of these horses was found to be dually infected with both *T. equi* and equine infectious anemia (EIA). The majority of these horses were found as clusters of positives associated with the same trainer and/or owner and epidemiology investigations conducted have implicated iatrogenic transmission as the primary method of transmission in all racehorse cases identified in 2017.

Equine Infectious Anemia

Reporting of EIA testing is summarized on a calendar-year basis. During 2017, a total of 1,299,683 EIA tests were conducted, resulting in detection of 80 positive horses in 10 States. These results are compared to 2016 when there

were 1,279,579 tests resulting in the detection of 52 positives in 17 States Figure 6 presents a summary of EIA testing from 2000-2017. Historical data and additional information on EIA are available online at http://www.aphis.usda.gov/animal-health/equine-health.

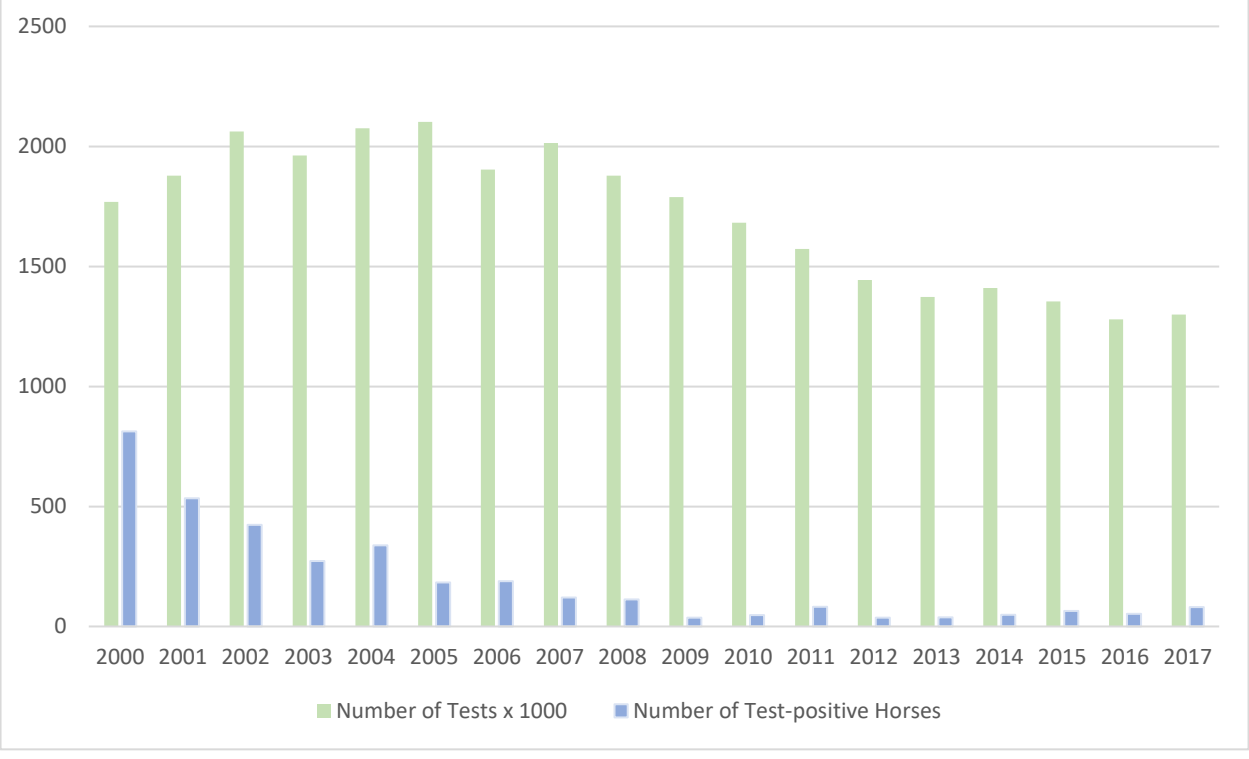

Figure 6. Equine infectious anemia test results, United States, 2000-2017

States are encouraged to provide EIA test data to VS through the NAHRS online reporting tool. VS requested EIA information by e-mail from States that did not use NAHRS and recorded the data in the NAHRS database.

For more information on equine surveillance, see http://www.aphis.usda.gov/animal-health/equine-health

Ovine and Caprine Surveillance

Scrapie Surveillance in Sheep and Goats

The United States accelerated its efforts to eradicate classical scrapie[1] in FY 2002 by adopting regulations requiring the official identification of sheep and goats and by implementing Regulatory Scrapie Slaughter Surveillance (RSSS) in FY 2003. During FY 2017, samples from 39,605 sheep and goats were collected at 205 sites in 43 States as part of the RSSS program. These samples were tested for scrapie using immunohistochemistry testing procedures on brain and/or lymph node specimens. These tests identified zero cases of classical scrapie in sheep and goats. As of the end of FY 2017, a total of 560,109 animals have been tested for scrapie through RSSS.

In addition to slaughter surveillance, field necropsies and live-animal biopsies are conducted for routine surveillance and as part of disease investigations or flock cleanup plans, including testing of potentially exposed, exposed, and

[1] In 2009, the OIE recognized Nor98-like (atypical) scrapie as a separate disease from classical scrapie that does not meet the OIE criteria as a notifiable disease. This determination was made based on differences in epidemiology and laboratory findings (most notably, the lack of evidence to support transmission under natural conditions and its random widespread occurrence). In line with these findings and the 2009 revisions to the OIE scrapie chapter, the United States no longer depopulates.

suspect animals. In FY 2017, a total of 2,323 sheep and goats were tested in 48 States as part of field investigations; one case of classical scrapie was identified in a goat already held under permanent quarantine.

For more information on ovine and caprine surveillance, see
https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/sheep-and-goat-health

Vesicular Stomatitis Virus Surveillance

In affected livestock, vesicular stomatitis virus causes blister-like lesions in the mouth, nostrils, hooves, and teats. While vesicular stomatitis can cause economic losses to livestock producers, it is a particularly important disease because its outward signs are similar to those of foot-and-mouth disease (FMD), an FAD of cloven-hoofed animals that was eradicated from the United States in 1929. Laboratory testing is required to distinguish these diseases in cloven-hoofed animals. Historically, outbreaks of vesicular stomatitis in domestic livestock occur in the Southwest United States during warm months and particularly along waterways. However, outbreaks are sporadic and relatively unpredictable. There have been eight vesicular stomatitis outbreaks since 2000 and the majority of the outbreaks began in May (five), followed by April (two), and August (one). The size of the past eight outbreaks have varied in size from four infected animals in one State to over 2,000 infected animals in eight States (Figures 7 and 8).

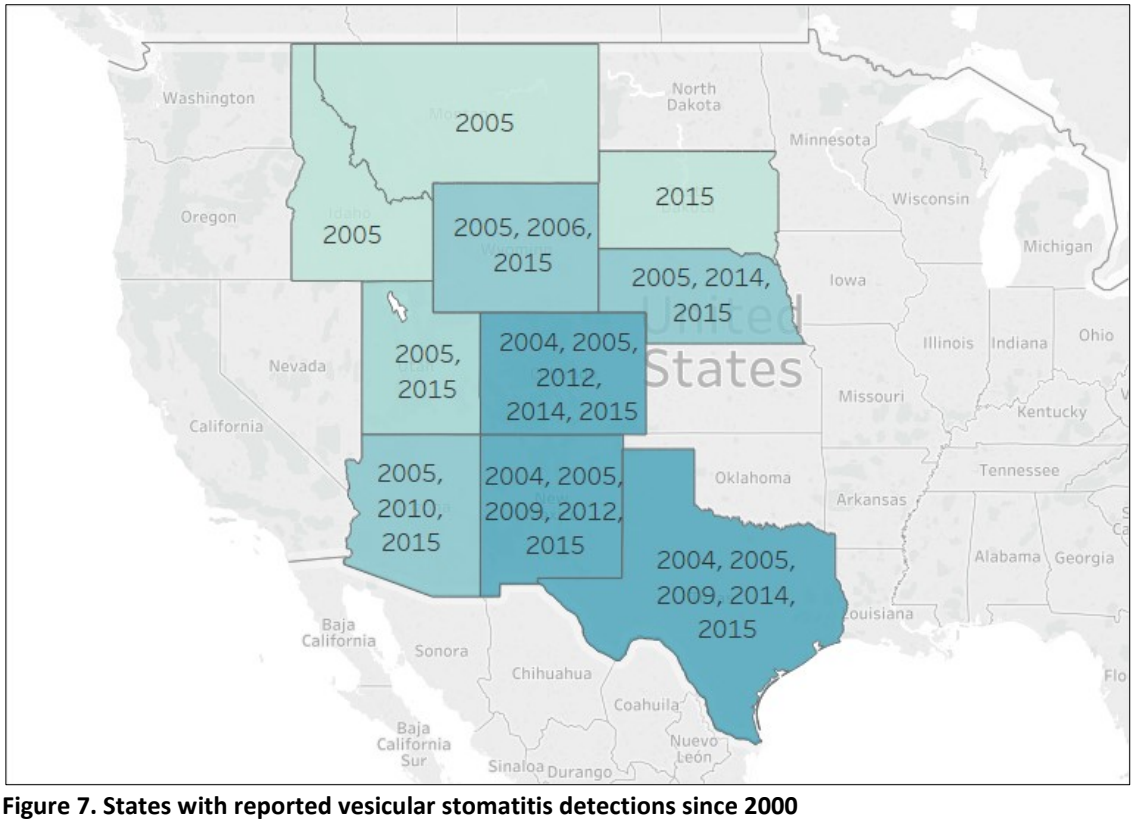

Figure 7. States with reported vesicular stomatitis detections since 2000

Vesicular stomatitis detections most commonly occur in equids and bovids with sporadic detections reported in sheep, goats, camelids, and swine. The numbers of equine and bovine vesicular stomatitis detections since 2000 are shown in Figure 8.

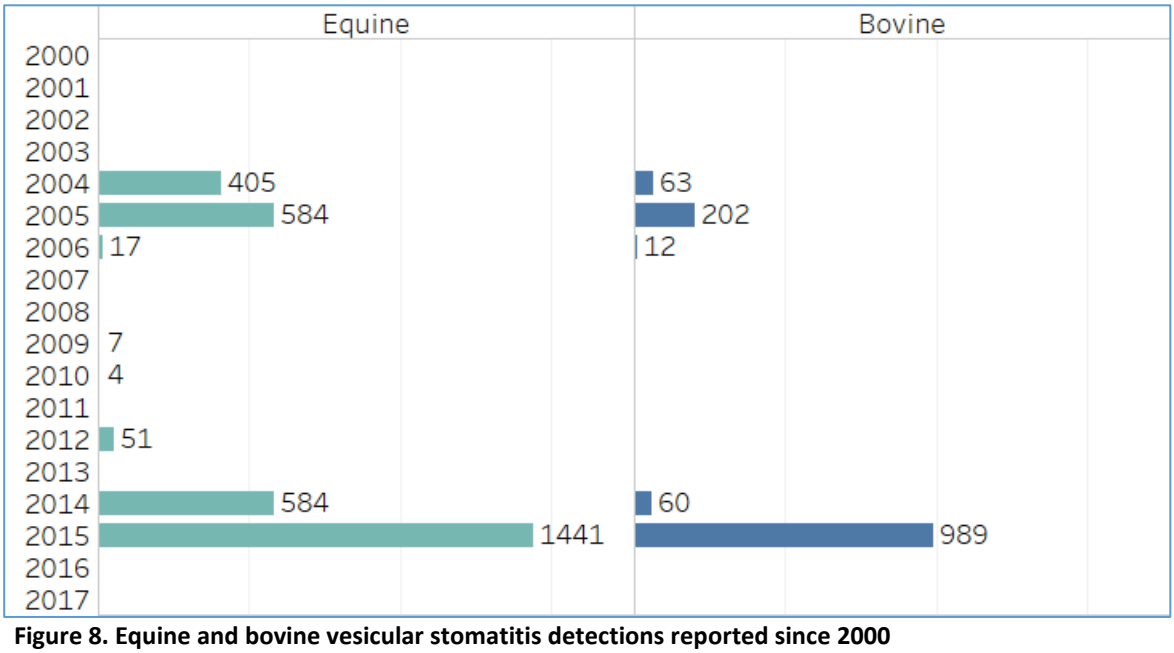

Figure 8. Equine and bovine vesicular stomatitis detections reported since 2000

Management and reporting of vesicular stomatitis cases changed in 2015 resulting in estimates only of the minimum number of positive animals. No cases of vesicular stomatitis were detected in 2017.

One Health Investigations

One Health is the concept that the health of animals, the health of people, and the viability of ecosystems are linked. This approach brings together the strengths of multiple health science professions including veterinarians, physicians, public health professionals, epidemiologists, ecologists, social scientists, toxicologists, and others – working locally, nationally, and globally – to attain optimal health for people, domestic animals, wildlife, plants and our environment.

The USDA-APHIS-VS One Health Coordination Center (OHCC) coordinates and helps implement One Health activities in VS. In this section, we highlight some key One Health investigations that APHIS was involved in during CY 2017.

***Salmonella* Heidelberg.** On August 30, 2016, APHIS was notified about a cluster of human illnesses due to a multidrug resistant strain of *Salmonella* Heidelberg associated with contact with Wisconsin dairy bull calves. Several State Departments of Animal Health and Public Health, the Centers for Disease Control and Prevention (CDC), and APHIS collaborated on the investigation. A total of 56 people infected with the outbreak strains of *Salmonella* Heidelberg were reported in 15 States from January 27, 2015, to November 25, 2017. Epidemiologic, laboratory, and traceback investigations linked ill people in this outbreak to contact with calves, including dairy calves. For more information on the human infections, see https://www.cdc.gov/salmonella/heidelberg-11-16/index.html.

Multiple VS units provided response support to the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP), including laboratory testing and epidemiologic investigations. VS worked with the DATCP to plan a case-control study of Wisconsin premises that included a questionnaire and sample collection. National Milk Producers Federation and the Professional Dairy Producers of Wisconsin indicated their support for the study. The study was conducted by DATCP personnel during 2017; samples were sent to NVSL for isolation. All *Salmonella* isolates were serotyped and S. Heidelberg isolates were sequenced and tested for antimicrobial resistance. CEAH is analyzing the results, and has presented the initial findings to DATCP and several industry groups. CDC closed out the human outbreak investigation as of February 16, 2018, after the reporting of human illnesses stopped.

HPAI and LPAI H7N9 North American Wild Bird Lineage CY 2017 Response. APHIS and CDC implemented a joint human health monitoring plan in collaboration with State public health departments. Responders and other persons exposed to birds infected with AI viruses were monitored to facilitate timely identification of possible human infections, provide prompt medical evaluation and treatment if needed, and reduce the opportunities for ongoing spread. APHIS additionally provided HPAI/LPAI H7 updates to CDC.

***Brucella abortus* Vaccine Strain RB51 Human Infections, Texas and New Jersey.** During CY 2017, two unrelated cases of human infection of the vaccine strain (RB51) of *Brucella abortus* were investigated. The Texas and New Jersey State Departments of Public Health and Animal Health, CDC, Food and Drug Administration, and APHIS collaborated on the investigations. CDC confirmed the infections, which were caused by consumption of raw (non-pasteurized) milk. For more information, see https://www.cdc.gov/media/releases/2017/p0915-raw-milk-brucella.html , https://www.cdc.gov/media/releases/2017/p1121-contaminated-raw-milk.html .

These are the first two reported cases of domestically acquired RB51 infection associated with consumption of raw milk in the U.S. public. Animal health officials continue to remind the public that the best way to protect against infection is to drink only pasteurized milk. Pasteurization kills *Brucella* strains, including RB51, as well as the bacteria that cause other serious illness such as tuberculosis, salmonellosis, and campylobacteriosis.

Variant Influenza Virus Infections. CDC monitors and reports on occurrence of 'seasonal influenza' outbreaks in people. These outbreaks are usually caused by human influenza A viruses (influenza A/H1 and A/H3). Sometimes people become infected with an influenza virus that normally circulates in swine, but not people. When this happens, the virus is called a "variant influenza virus." These viruses are designated with a lower-case "v" after the subtype (ex: H1N2v). As part of APHIS surveillance for influenza A viruses in swine, APHIS and CDC hold monthly collaboration calls and conduct joint public health-animal health investigations of CDC laboratory-confirmed human infections with variant influenza A viruses. These investigations result in close collaboration among local, State, and Federal public and animal health officials. NVSL provides diagnostic support for swine samples collected from outbreaks. Virus characterization data is shared with State and Federal animal and public health officials, and is also deposited in GenBank®, a public access database. A total of 67 variant virus infections were reported to CDC during CY 2017. Sixty-two of these have been A(H3N2)v viruses, one was an A(H1N1)v virus, and four were A(H1N2)v viruses. Six of these 67 infections resulted in hospitalization; all patients have recovered. Early identification and investigation of human infections with novel influenza A viruses are critical for better understanding of the infection risk and to enable appropriate response.

Additional information on influenza in swine can be found at https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/swine-disease-information. Information on variant influenza infection in humans, and strategies to interact safely with swine can be found at https://www.cdc.gov/flu/swineflu/variant.htm, and htttp://www.nasphv.org/documentsCompendiaZoonoticInfluenza.html

Multistate Outbreaks of Human Salmonella Infections Linked to Live Poultry in Backyard Flocks. In CY 2017, several State Departments of Animal Health and Public Health, CDC, and APHIS investigated 10 separate multistate outbreaks of salmonella infections in people who had contact with live poultry in backyard flocks, and the largest number of illnesses linked to contact with backyard poultry ever recorded by CDC. Epidemiologic, traceback, and laboratory findings linked the 10 outbreaks to contact with live poultry, such as chicks and ducklings, from multiple hatcheries. For more information, as well as infection prevention advice to backyard flock owners, mail-order hatcheries, and feed stores that sell or display live poultry, see https://www.cdc.gov/salmonella/live-poultry-06-17/index.html.

APHIS provides education and outreach materials on biosecurity for backyard poultry owners to prevent disease spread. Find more information

The National Animal Health Reporting System (NAHRS)

The NAHRS program is designed to provide summary-level data on the presence of reportable diseases in the United States. The U.S. NLRAD is based on OIE-listed diseases and includes other significant diseases identified by stakeholders. NAHRS gathers monthly data from participating SAHOs on the presence of the listed diseases (Appendix 1).

NAHRS is a collaborative effort between participating States, the American Association of Veterinary Laboratory Diagnosticians (AAVLD), the United States Animal Health Association (USAHA), and USDA-APHIS. NAHRS functions under the guidance of the joint AAVLD-USAHA Animal Health Surveillance and Information Systems Committee—NLRAD-NAHRS subcommittee, which includes representatives from the AAVLD, USAHA, USDA-APHIS-VS, participating States, and experts representing the major commodity groups. NAHRS is managed by the VS Center for Epidemiology and Animal Health's (CEAH) Surveillance Design and Analysis (SDA) unit.

Objectives of the NAHRS are:

- To demonstrate the integrated and transparent nature of disease surveillance and reporting in the United States and ultimately help protect the global market share of U.S. animals and animal products sold
- To provide a primary source of information used in the completion of OIE reports by USDA-APHIS-VS
- To provide reporting that reflects the summary-level animal disease status of the United States

The NAHRS reflects a broad range of animal disease surveillance activities in the United States. Information on NAHRS, including the current reportable disease list, the monthly State report form, NAHRS Operational Manual, and additional information for participants, can be found on the NAHRS Web site: http://www.aphis.usda.gov/animal-health/nahrs. The NAHRS Operational Manual and Uniform Methods and Rules (UM&R) describe disease reporting criteria and participation requirements for States and answer commonly asked questions on NAHRS.

U.S. NLRAD Update

APHIS is developing a proposed rule that will require reporting of NLRAD diseases. Anyone who suspects or identifies a notifiable disease will need to immediately report the case to State and Federal authorities. For monitored diseases, laboratories will report occurrence information monthly to States, and States will report monthly to APHIS through NAHRS. A U.S. NLRAD framework document describing the proposed rule and management of the program was completed and posted on the APHIS Web site in 2016 for stakeholder review and comment. See https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/program-overview/ct_national_list_reportable_animal_diseases . The document was also presented at the 2016 AAVLD-USAHA meeting in Greensboro, NC. Comments received on the framework document are being used to guide the development of the proposed NLRAD rule.

NAHRS Reporting

Participating SAHOs collect, collate, and report on the occurrence of NAHRS reportable diseases identified with a high level of certainty using NAHRS reporting criteria. NAHRS reporting criteria include standards of laboratory testing and additional criteria outlined in the NAHRS Operational Manual and UM&R. The disease reporting criteria are considered minimum guidelines and SAHOs may use additional information to determine whether to report the presence of disease to the NAHRS (i.e., epidemiological link or other non-listed laboratory tests). The discretion of NAHRS reporting by SAHOs is considered essential for valid reporting of disease because disease testing technology and other considerations may change rapidly. A designated State official approves the State monthly NAHRS report and submits it to CEAH through the secure NAHRS online reporting tool.

NAHRS collects data from reporting States on the presence or absence of diseases on the NLRAD (Appendix 1). A "yes" response from a State indicates that at least one new case of that particular disease met the level of certainty for reporting during the specific month; a "no" response indicates that, as far as SAHOs are aware, no new cases of disease met the level of certainty required to report the disease in the State that month. Reporting and notification of FADs and VS program diseases must follow specific requirements. As with all NAHRS reportable diseases, endemic diseases are reported only when there is a level of certainty of the disease in a State. A "no" response does not explicitly infer that the endemic disease does not occur in the State. CEAH validates NAHRS data against other national reporting systems, including VS program disease reports (i.e., brucellosis, pseudorabies, BSE, bovine tuberculosis, scrapie, EIA), ArboNET reporting, other State validated information, and OIE immediate reports. In addition to submitting the monthly report, designated official personnel in participating States may use the secure NAHRS online reporting system to view their monthly reports, cumulative summary reports, national cumulative summary reports, and NAHRS annual reports.

Participation

In 2017, 39 States participated in NAHRS by submitting at least one monthly report (figure 9). Figure 10 shows the CY 2017 APHIS-VS districts used for reporting NAHRS summary data.

Reporting Summary

The NAHRS Annual Report provides a summary-level overview of NAHRS reporting in 2017. The NAHRS report is published without identifying the State, owner, or premises where the disease occurred. The following tables and bullets were used to summarize data reported to NAHRS for each animal species or category:

- Tables 3-8: CY 2017 Summary of Confirmed Positive Monthly State Reports by Species and VS District
- List of Reportable Diseases Not Reported to NAHRS in CY 2017

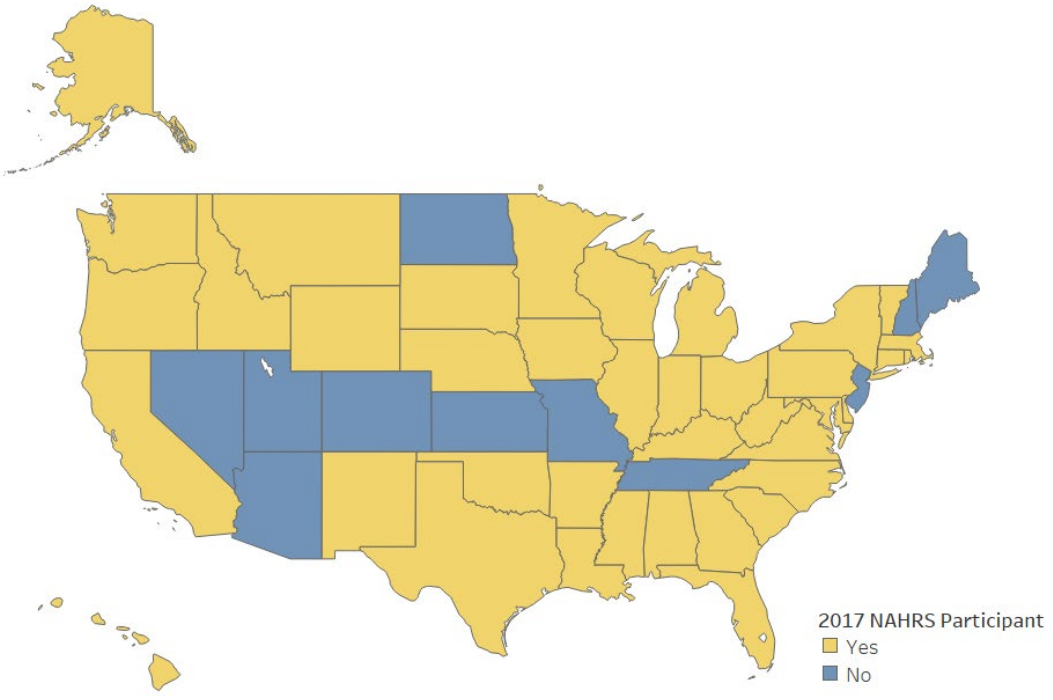

Figure 9. National Animal Health Reporting System (NAHRS) 2017 State participants

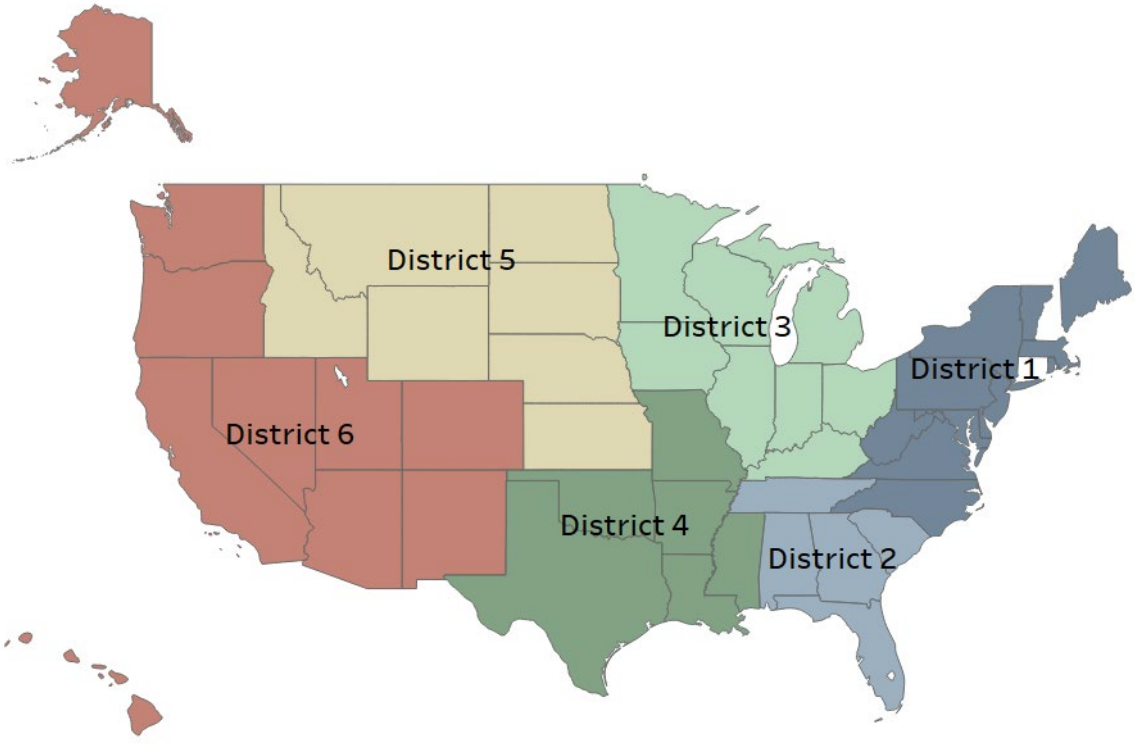

Figure 10. APHIS-VS districts used for reporting summary-level National Animal Health Reporting System NAHRS) data

Bovine

Table 3. CY 2017 Summary of Confirmed Positive Monthly State Reports for Bovine Diseases

Disease	# of STATES that reported the disease	# of Monthly State REPORTS of the Disease						
		District 1	District 2	District 3	District 4	District 5	District 6	Entire U.S.
• Anaplasmosis (*Anaplasma marginale, A. centrale*)	24	20	16	32	33	26	5	132
• Anthrax (*Bacillus anthracis*)	1	…	…	…	…	1	…	1
• Bluetongue	12	2	13	16	12	11	3	57
• Bovine brucellosis (*B. abortus*)	2	…	…	…	…	6	…	6
• Bovine genital campylobacteriosis (*Campylobacter fetus venerealis*)	1	…	…	…	…	…	1	1
• Bovine spongiform encephalopathy (BSE)	1	…	1	…	…	…	…	1
• Bovine tuberculosis (*Mycobacterium bovis*)	6	…	…	3	5	4	4	16
• Bovine viral diarrhea (BVD)	23	24	15	50	25	33	22	169
• Enzootic bovine leukosis (BLV)	24	44	17	65	24	35	22	207
• Epizootic hemorrhagic disease (EHD)	7	1	1	9		12	1	24
• Infectious bovine rhinotracheitis / infectious pustular vulvovaginitis (IBR/IPV)	20	9	14	44	24	8	14	113
• Malignant catarrhal fever (sheep form)	2	…	…	1	…	…	1	2
• Paratuberculosis (Johne's Disease - (*Mycobacterium avium paratuberculosis*))	29	50	10	78	34	46	27	245
• Porcine brucellosis (*B. suis*)[1]	1	…	…	…	3	…	…	3
• Q fever (*Coxiella burnetii*)	1	…	…	1		…	…	1
• Rabies	7	5	…	1	5	2	…	13
• Trichomoniasis (*Tritrichomonas [Trichomonas] foetus*)	16	…	10	3	49	7	17	86

[1]Exposure to feral swine

Reportable bovine diseases <u>not</u> reported to NAHRS in 2017:

- Akabane
- Aujeszky's disease (pseudorabies)
- Babesiosis (*Babesia bovis, B. bigemina*)

- Brucellosis (*B. melitensis*)
- Contagious bovine pleuropneumonia (*Mycoplasma mycoides mycoides*)
- Crimean Congo hemorrhagic fever
- Echinococcosis / hydatidosis
- Foot-and-mouth disease (FMD)
- Heartwater (*Cowdria ruminantium*)
- Hemorrhagic septicemia (*Pasteurella multocida*, serotypes B/Asian or E/African)
- Lumpy skin disease
- Melioidosis (*Burkholderia pseudomallei*)
- New World screwworm (*Chrysomyia hominivorax*)
- Old World screwworm (*Chrysomyia bezziana*)
- Rift Valley fever
- Rinderpest
- Theileriasis (*Theileria annulata, T. parva*)
- Trypanosomiasis (*Trypanosoma congolense, T. vivax, T. brucei brucei, T. evansi*))
- Vesicular stomatitis

Ovine and Caprine

Table 4. CY 2017 Summary of Confirmed Positive Monthly State Reports for Ovine and Caprine Diseases

Disease	# of STATES that reported the disease	# of Monthly State REPORTS of the Disease						
		District 1	District 2	District 3	District 4	District 5	District 6	Entire U.S.
• Bluetongue	5	…	1	2	…	1	6	10
• Caprine arthritis / encephalitis (CAE)	20	36	7	35	…	18	13	109
• Contagious agalactia (*Mycoplasma agalactiae, M. Capricolum capricolum, M. putrefaciens, M. mycoides mycoides, M. mycoides mycoides LC*)	2	…	…	…	…	1	1	2
• Enzootic abortion of ewes (ovine chlamydiosis, *Chlamydophilia abortus*)	3	…	…	5	…	…	8	13
• Maedi-visna / ovine progressive pneumonia	7	9	…	7	…	7	1	24
• Ovine epididymitis (*Brucella ovis* infection)	6	1	…	…	…	11	7	19
• Paratuberculosis (Johne's disease - (*Mycobacterium avium paratuberculosis*))	18	12	2	26	…	11	12	63
• Q Fever (*Coxiella burnetii*)	6	3	…	10	3	…	4	20
• Rabies	5	3	1	…	1	1	…	6

• Salmonellosis (*Salmonella abortus ovis*)	1	…	…	…	…	1	…	1
• Scrapie*	1	…	…	…	…	…	1	1
• West Nile fever	1	1	…	…	…	…	…	1

*The goat from the long-term quarantined herd in District 6 that tested positive in July 2017

Reportable Ovine and Caprine diseases not reported to NAHRS in CY 2017:

- Akabane
- Anthrax
- Aujeszky's disease (pseudorabies)
- Bovine brucellosis (*B. abortus*)
- Bovine tuberculosis (*Mycobacterium bovis*)
- Brucellosis (*B. melitensis*)
- Contagious caprine pleuropneumonia (*Mycoplasma capricolum capripneumoniae)*
- Crimean Congo hemorrhagic fever
- Echinococcosis / hydatidosis
- Foot-and-mouth disease (FMD)
- Heartwater (*Cowdria ruminantium*)
- Mange (*Sarcoptes scabiei var ovis, Chorioptes bovis, Psoroptes ovis, Psoroptes cuniculi, Psorergates ovis*)
- Meliodosis (*Burkholderia pseudomallei*)
- Nairobi sheep disease
- New World screwworm (*Chrysomyia hominivorax*)
- Old World screwworm (*Chrysomyia bezziana*)
- Peste des petits ruminants
- Rift Valley fever
- Rinderpest
- Sheep pox and goat pox
- Theileriasis (*Theileria annulata, T. parva*)
- Tularemia (*Francisella tularensis*)
- Vesicular stomatitis

Equine

Table 5. CY2017 Summary of Confirmed Positive Monthly State Reports for Equine Diseases

Disease	# of STATES that reported the disease	# of Monthly State REPORTS of the Disease						
		District 1	District 2	District 3	District 4	District 5	District 6	Entire U.S.
• Equine encephalomyelitis (Eastern)	11	6	11	8	8	…	…	33
• Equine herpesvirus myeloencephalopathy (EHV1 - EHM)	10	3	…	4	1	…	7	15
• Equine infectious anemia (EIA)	10	1	3	4	10	5	2	25
• Equine influenza (EI)	12	11	4	1	…	4	8	28
• Equine piroplasmosis (babesiosis, *Theileria [Babesia] equi, B. caballi)*	6	…	…	6	15	…	1	22
• Equine rhinopneumonitis (EHV 1)	17	4	4	6	8	4	11	37
• Equine viral arteritis (EVA)	4	…	2	…	8	…	1	11
• Pigeon fever (*Corynebacterium pseudotuberculosis*, ulcerative lymphangitis)	4	…	…	2	5	…	10	17
• Rabies	2	3	…	…	…	…	…	3
• Strangles (*Streptococcus equi equi*)	18	31	9	12	9	…	10	71
• West Nile fever	24	9	10	22	13	6	8	68

Reportable equine diseases <u>not</u> reported to NAHRS in CY 2017:

- African horse sickness
- Anthrax (*Bacillus anthracis*)
- Contagious equine metritis (*Taylorella equigenitalis*)
- Dourine (*Trypanosoma equiperdum*)
- Echinococcosis / hydatidosis
- Equine encephalomyelitis (Western)
- Glanders (*Pseudomonas mallei*)
- Hendra
- Japanese encephalitis
- Meliodosis (*Burkholderia pseudomallei*)
- New World screwworm (*Chrysomyia hominivorax*)
- Old World screwworm (*Chrysomyia bezziana*)
- Surra (*Trypanosoma evansi*)

- Trichinellosis (*Trichinella spiralis*)
- Tularemia (*Francisella tularensis*)
- Venezuelan equine encephalomyelitis
- Vesicular stomatitis

Porcine

Table 6. CY 2017 Summary of Confirmed Positive Monthly State Reports for Porcine Diseases

Disease	# of STATES that reported the disease	# of Monthly State REPORTS of the Disease						
		District 1	District 2	District 3	District 4	District 5	District 6	Entire U.S.
• Aujeszky's disease (pseudorabies) [1]	1	…	…	…	1	…	…	1
• Porcine brucellosis (*B. suis*)[1]	3	1	…	…	2	…	…	3
• Porcine reproductive and respiratory syndrome (PRRS)	21	18	2	46	12	24	14	116
• Swine enteric coronavirus disease (SECD) (Porcine epidemic diarrhea virus - PEDV; Porcine delta coronavirus (PDCoV)[2]	12	5	…	36	12	11	3	67
• Transmissible gastroenteritis (TGE)	2	…	…	2	5	…	…	7

[1] Only feral swine and transitional (high-risk) herds reported in 2017; no commercial production swine herds were positive.

[2] Further information on SECD is included in the Swine Surveillance section of the Federally Supported Active and Passive Surveillance Activities in CY 2017 in this report and at the following website: http://www.aphis.usda.gov/animal-health/secd

Reportable porcine diseases <u>not</u> reported to NAHRS in CY 2017:

- African swine fever
- Anthrax (*Bacillus anthracis*)
- Classical swine fever (hog cholera)
- Cysticercosis (*Cysticercus cellulosae* metacestode stage of *Taenia solium*)
- Echinococcosis/hydatidosis
- Foot-and-mouth disease (FMD)
- Japanese encephalitis
- Meliodosis (*Burkholderia pseudomallei*)
- Nipah virus encephalitis
- New World screwworm (*Cochliomyia hominivorax*)
- Old World screwworm (*Chrysomyia bezziana*)

- Rabies
- Rinderpest
- Swine vesicular disease
- Trichinellosis (*Trichinela spiralis*)
- Tularemia (*Francisella tularensis*)
- Vesicular exanthema
- Vesicular stomatitis

Avian

Table 7. CY 2017 Summary of Confirmed Positive Monthly State Reports for Avian Diseases

Disease	# of STATES that reported the disease	# of Monthly State REPORTS of the Disease						
		District 1	District 2	District 3	District 4	District 5	District 6	Entire U.S.
• Avian chlamydiosis (psittacosis and ornithosis, *Chlamydia psittaci*) [1]	3	…	…	1	…	…	2	3
• Avian infectious bronchitis	10	18	21	4	12	…	12	67
• Avian infectious laryngotracheitis [2]	17	22	5	13	8	…	14	62
• Highly pathogenic avian influenza (reporting of occurrence in all birds)	2	…	1	…	…	1	…	2
• Infectious bursal disease (Gumboro disease)	3	…	11	…	5	…	12	28
• Low pathogenic avian influenza (H5 or H7 subtypes)[3]	8	3	2	3	…	1	3	12
• Mycoplasmosis (*M. gallisepticum*)	16	21	19	28	8	2	12	90
• Mycoplasmosis (*M. synoviae*)	16	18	20	16	10	2	17	83
• Pullorum disease (*Salmonella pullorum*)[4]	1	…	…	…	…	1	…	1
• Turkey rhinotracheitis	1	1	…	…	…	…	…	1

[1] No commercial production flock detections in 2017.

[2] Includes reports of vaccine-related cases and noncommercial production flocks.

[3] Identified sporadically in backyard poultry and in live-bird markets that serve local ethnic communities.

[4] No commercial production flock detections in 2017.

Reportable avian diseases not reported to NAHRS in CY 2017:

- Newcastle disease (Exotic)
- Duck viral hepatitis
- Fowl typhoid (*Salmonella gallinarum*)

Farmed Cervids

Table 8. CY 2017 Summary of Confirmed Positive Reports for Farmed Cervids Diseases

Disease	# of STATES that reported the disease	# of Monthly State REPORTS of the Disease						
		District 1	District 2	District 3	District 4	District 5	District 6	Entire U.S.
• Bluetongue	1	…	5	…	…	…	…	5
• Chronic wasting disease (CWD)	5	4	…	7	7	…	…	18
• Epizootic hemorrhagic disease (EHD)	6	1	6	5	1	1	…	14
• Malignant catarrhal fever (sheep form)	1	…	1	…	…	…	…	1
• Rabies	1	1	…	…	…	…	…	1

Reportable farmed cervid diseases not reported to NAHRS in 2017:

- Foot-and-mouth disease (FMD)
- Vesicular stomatitis (VS)
- Rinderpest
- Akabane
- Rift Valley fever
- Aujesky's disease (pseudorabies)
- Echinococcosis / hydatidosis
- Heartwater (*Cowdria ruminantium*)
- New World screwworm (*Chrysomyia hominivorax*)
- Old World screwworm (*Chrysomyia bezziana*)
- Paratuberculosis (Johne's disease)
- Bovine tuberculosis
- Malignant catarrhal fever
- Crimean Congo hemorrhagic fever
- Brucellosis
- Q fever (*Coxiella burnettii)*
- Melioidosis (*Burkholderia pseudomallei*)

- Anthrax (*Bacillus anthracis*)
- Caprine and ovine brucellosis (*B. melitensis*)
- Porcine brucellosis (*B. suis*)
- Bovine tuberculosis (*Mycobacterium bovis*)

Lagomorph

- Myxomatosis: Reported by one State.
- Tularemia (*Francissella tularensis):* Reported by three States.

Reportable lagomorph diseases <u>not</u> reported to NAHRS in CY 2017:

- Rabbit hemorrhagic disease

Other OIE Diseases

- Leishmaniosis: Reported by two States.

Reportable other diseases <u>not</u> reported to NAHRS in CY 2017:

- Camelpox

Bee Diseases (OIE-Listed) - Optional Reporting

Bee disease reported through NAHRS is optional, as other agencies have primary responsibility for bee diseases. The following bee disease occurrences were reported through NAHRS.

- American foulbrood of honey bees
- European foulbrood of honey bees
- Varrosis of honey bees
- Small hive beetle infestation (Infestation with *Aethina tumida*)*
- Acarapisosis of honey bees (Infestation with *Acarapis woodi)**
- Tropilaelaps infestation of honey bees (Infestation with *Tropilaelaps spp.)**

Aquaculture

AMPHIBIAN Diseases Reported:

- Infection with *Batrachochytrium dendrobatidis* was reported by three States.
- Infection with ranavirus in wild animals was reported by one State.

CRUSTACEAN Diseases Reported:

- Acute hepatopancreatic necrosis disease reported by one State.

FISH Diseases Reported:

- Infection with *Aphanomyces invadans* (epizootic ulcerative syndrome) in wild fish was reported by one State.
- Infectious hematopoietic necrosis (IHN) was reported in wild fish by one State.
- Koi herpesvirus disease was reported by four States.

Reportable aquaculture diseases <u>not</u> reported to NAHRS in CY 2017:

- Fish: Bacterial kidney disease (*Renibacterium salmoninarium)*
- Fish: Epizootic hematopoietic necrosis
- Fish: Epizootic ulcerative syndrome
- Fish: Gyrodactylosis (*Gyrodactylus salaris*)
- Fish: Infection with salmonid alphavirus
- Fish: Infectious salmon anemia (ISA)(HPR-deleted)*
- Fish: Infectious salmon anemia (ISA)(HPR0)*
- Fish: Red sea bream iridoviral disease
- Fish: Spring viremia of carp
- Fish: Viral hemorrhagic septicemia (VHS)
- Mollusc: Infection with abalone herpes-like virus
- Mollusc: Infection with *Bonamia exitiosa*

- Mollusc: Infection with *Bonamia ostreae*
- Mollusc: Infection with *Marteilia refringens*
- Mollusc: Infection with *Perkinsus marinus*
- Mollusc: Infection with *Perkinsus olseni*
- Crustacean: Taura syndrome
- Crustacean: White tail disease*

FAD Surveillance and Investigations

APHIS-VS conducted 1,790 FAD investigations in 2017 (Figure 11), resulting in the following detections:

- Highly pathogenic avian influenza
- New World screwworm
- Foreign ectoparasites (ticks)
- Infectious salmon anemia
- Acute hepatopancreatic necrosis disease
- Equine piroplasmosis

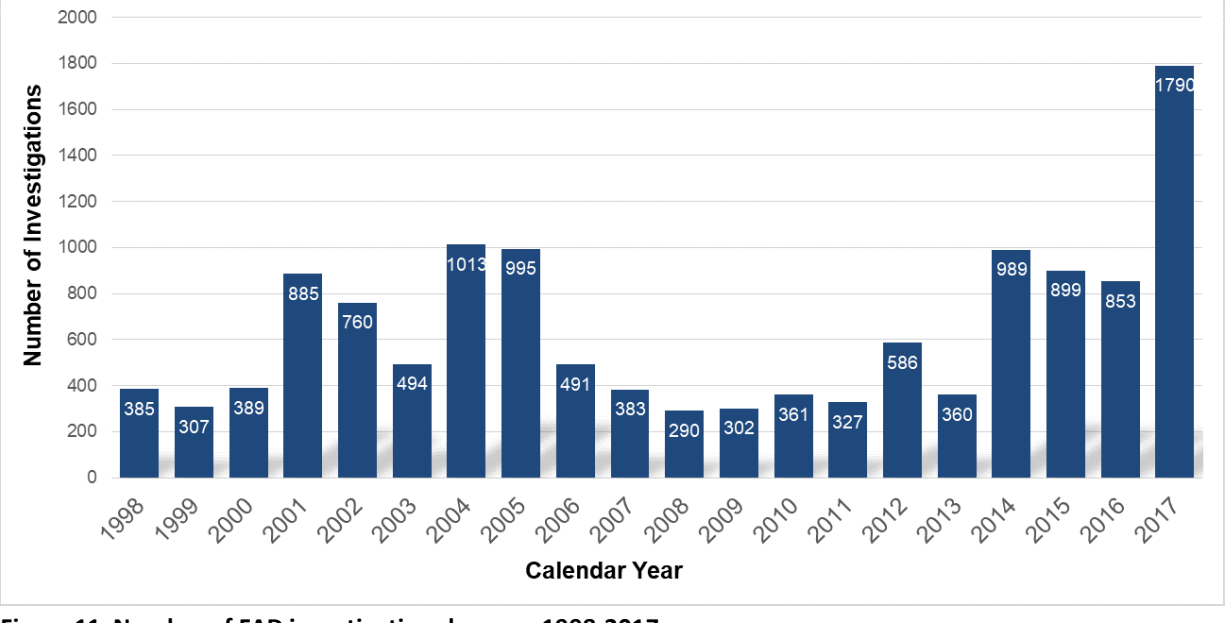

Figure 11. Number of FAD investigations by year, 1998-2017

In CY 2017, as in most proceeding years, the majority of FAD investigations were primarily due to vesicular complaints (blister-like lesions). Concern about vesicular lesions in bovids, goats, sheep, camelids, equids, farmed cervids, and swine is due to FMD, which primarily affects cloven-hoofed domestic and wild animals. None of the 1,580 vesicular condition investigations identified in 2017 were positive for FMD. Swine had the most vesicular complaints in 2017, primarily due to Senecavirus A. A summary of investigated vesicular complaints is included in table 9 and additional information is available online at https://www.aphis.usda.gov/animal_health/emergency_management/downloads/summary_fad_investigations.pdf

Table 9. Vesicular Conditions in 2017

Species/animal	Number of vesicular complaints
Equids	80
Bovids (cattle, bison)	78
Swine	1,395
Sheep	10
Goats	12
Cervids (reindeer)	1
Camelids (alpaca, llama, unknown type of camel)	4
Total	**1,580**

OIE Reportable Disease Events

The OIE is the intergovernmental organization responsible for improving animal health worldwide. The OIE is a reference organization of the World Trade Organization (WTO). The United States is a member country of the OIE and a signatory country of the WTO. Member countries are obligated to comply with the WTO's Agreement on the Application of Sanitary and Phytosanitary Measures. The WTO assigned standards-setting authority for international trade-related animal health issues to the OIE. The United States meets its OIE reporting obligations using a variety of sources including NAHRS, FAD reports, national program disease surveillance reports, and others.

OIE member countries are required to comply with OIE notification requirements by reporting on the status of OIE reportable diseases through the secure, Web-based OIE World Animal Health Information System (WAHIS). Notification requirements include:

- A twice-yearly report on the absence or presence of diseases listed by the OIE and information of epidemiological significance to other countries;
- An annual report on any other information of significance to other countries, including information from twice-yearly reports, other animal diseases, zoonoses in humans, animal populations, veterinary services infrastructure, and laboratory tests and vaccines;
- Immediate notification and follow-up reports for the following events:
  - First occurrence of a listed disease and/or infection in a country;
  - Reoccurrence of a listed disease and/or infection in a country;
  - First occurrence of a new strain of pathogen of an OIE-listed disease in a country;
  - A sudden and unexpected increase in the distribution, incidence, morbidity, or mortality of a listed disease prevalent within a country;
  - An emerging disease with significant morbidity, mortality, or zoonotic potential;
  - Evidence of change in epidemiology of a listed disease, including host range, pathogenicity, and strain, particularly if there is a zoonotic impact.

Additional information on the OIE, as well as the OIE List of Diseases Reportable, can be found at the OIE website: http://www.oie.int/

U.S. Reporting to the OIE in 2017

APHIS submitted all required U.S. reporting to the OIE in 2017. Reporting included:

- U.S. Terrestrial and Aquatic, January – June 2017 Six-Monthly Report on the Notification of the Presence of OIE-Listed Diseases;
- U.S. Terrestrial and Aquatic, July-December 2017 Six-Monthly Report on the Notification of the Presence of OIE-Listed Diseases;
- U.S. 2017 Annual OIE-FAO-WHO Animal Health Report;
- U.S. Annual Reconfirmation of Freedom Documentation (Official Recognition Disease Status) for:
  - Foot-and-mouth disease
  - African horse sickness
  - Classical swine fever
  - Contagious bovine pleuropneumonia
  - Pestes des petits ruminants
  - BSE risk status; and
  - Required immediate and follow-up U.S. OIE reports (listed below).

Current and past submitted U.S. OIE report information, including routine and immediate reports, is available on the OIE WAHIS Interface http://www.oie.int/wahis_2/public/wahid.php/Wahidhome/Home.

U.S. OIE Immediate Notification Disease Events in 2017

Summary of Reports: In 2017, APHIS submitted six OIE immediate reports on animal disease events in the U.S. These included two LPAI reports, two HPAI reports, one atypical BSE report, and one report for acute hepatopancreatic necrosis disease. Event summaries can be found on the OIE website: http://www.oie.int/wahis_2/public/wahid.php/Wahidhome/Home/indexcontent/newlang/en

2017 Immediate OIE reports

Avian Influenza (Infection with Avian Influenza Viruses)

AI is caused by influenza type A viruses, which can infect poultry (such as chickens, turkeys, pheasants, quail, domestic ducks, geese, and guinea fowl) and are carried by free-flying waterfowl such as ducks, geese, and shorebirds. AI viruses are classified by a combination of two groups of proteins: hemagglutinin or "H" proteins, of which there are 16 (H1-H16), and neuraminidase or "N" proteins, of which there are 9 (N1-N9). Many different combinations of "H" and "N" proteins are possible. Each combination is considered a different subtype, and each subtype can be further sub-classified as different strains. AI viruses are identified by their pathogenicity (low or high)—the ability of a particular virus strain to produce disease in domestic chickens. Any influenza A virus (including H5 and H7 avian influenza viruses) in its highly pathogenic form is reportable in birds, but only H5 and H7 LPAI viral infections in poultry are notifiable as per Chapter 10.4 on avian influenza of the OIE Terrestrial Animal Health Code (2017): http://www.oie.int/index.php?id=169&L=0&htmfile=chapitre_avian_influenza_viruses.htm

HPAI H5N2 Wild Bird—Montana

- OIE Immediate Report January 9, 2017—Resolved March 29, 2017

The sample, from a wild mallard duck, was collected on December 27, 2016, as part of the hunter-harvested wild bird avian influenza surveillance program. This detection of HPAI (Eurasian/American) H5N2 virus in a wild bird was not associated with any commercial poultry in the United States.

HPAI H7N9—Tennessee

- OIE Immediate Report March 6, 2017—Resolved August 11, 2017

HPAI H7N9 of North American wild bird lineage was identified in a chicken broiler-breeder flock in Tennessee. APHIS, in conjunction with the Tennessee Department of Agriculture, responded to the event by conducting a comprehensive epidemiological investigation along with enhanced surveillance and testing. The last positive detection of HPAI H7N9 in poultry was made March 15, 2017. In addition to having no further HPAI detections, the State of Tennessee completed mandatory surveillance in the State and control areas, with negative results for HPAI; depopulated all infected premises, with appropriate disposal; and cleaned and disinfected the infected premises (including, but not limited to, outside areas, equipment, trucks, and other fomites). There were no HPAI detections through wild bird surveillance within 3 months of the closing of the event.

LPAI H5N2—Wisconsin

- OIE Immediate Report March 6, 2017—Resolved June 23, 2017

Testing of a commercial turkey flock occurred after birds exhibited signs of depression. Samples were submitted for laboratory testing and were confirmed positive for influenza A virus H5N2 LPAI North American wild bird origin. APHIS and the Wisconsin Department of Agriculture, Trade, and Consumer Protection conducted and completed a comprehensive epidemiological investigation of this event. In addition to having no further LPAI detections, the following activities were completed: all mandatory surveillance in officially established control areas with negative results for avian influenza virus; depopulation of the infected premises through controlled marketing of the birds; and cleaning and disinfection of the infected premises.

LPAI H7N9—Alabama, Georgia, Kentucky, Tennessee

- OIE Immediate Report March 10, 2017—Resolved June 5, 2017

As part of routine, pre-slaughter testing and surveillance for H5/H7 avian influenza, LPAI H7N9 of North American wild bird lineage was detected in healthy broiler-breeder chickens in Tennessee. Subsequent detections then occurred in broiler-breeder flocks in Alabama, Georgia, and Kentucky. APHIS and State Departments of Agriculture conducted and completed a comprehensive epidemiological investigation of this event. The last positive detection of LPAI H7N9 in poultry was made in March of 2017. In addition to having no further LPAI detections, the following activities were completed: all mandatory surveillance in the officially established control areas with negative results for LPAI; depopulation of the infected premises and the appropriate disposal of birds and material; cleaning and disinfection of the infected premises (including, but not limited to, outside areas, equipment, trucks, and other fomites); and testing of surveillance samples, all of which tested negative for avian influenza virus.

'Atypical' BSE—Alabama

- OIE Immediate Report July 18, 2017—July 19, 2017

BSE is a transmissible spongiform encephalopathy that causes fatal neurological disease of adult cattle. Classical (C-type) BSE occurs when cattle ingest infectious BSE prions from contaminated animal-source proteins. Atypical (H- and L-type) BSE occurs spontaneously. As part of the United States' targeted surveillance program for BSE, a case of atypical BSE was identified in an 11-year-old beef cow. This atypical BSE was classified as L-type. Native cases of BSE in the United States have all been atypical BSE cases – this is only the fourth case of atypical BSE identified in over 20 years of surveillance. The last case was in 2012. The identified animal did not enter any food supply channels and at no time presented a risk to human health. Specified risk material removal and the ruminant-to-ruminant feed bans continue to be effectively applied.

Acute Hepatopancreatic Necrosis Disease (AHPND)—Texas

- OIE Immediate Report August 23, 2017—December 26, 2017

AHPND is caused by the bacteria *Vibrio parahaemolyticus* and causes mass mortality in giant tiger prawns (*Penaeus monodon*) and whiteleg shrimp (*P. vannamei*). AHPND was detected in farmed shrimp (*P. vannamei)* in Texas. APHIS and Texas Parks and Wildlife Department (TPWD) conducted a comprehensive epidemiological investigation and worked collaboratively to respond to the event. The farm was placed under quarantine and all animals were harvested, infected premises cleaned and disinfected, including all harvesting equipment as well as aerators and pumps, and all farm ponds and ditches were dried and disinfected. Environmental samples and surveillance in the control area were negative for AHPND. As a precaution, TPWD will carry out additional surveillance and requirements prior to restocking through the Texas Shrimp Inspection Program.

Appendix 1. 2017 U.S. National List of Reportable Animal Diseases

(* 2017 OIE-Listed Diseases)

Changes from previous year:

Porcine:

Removed: C801 Swine erysipelas

(Non OIE listed commodity recommendation)

Equine:

Added: C752 Pigeon fever (*Corynebacterium pseudotuberculosis,* ulcerative lymphangitis)

(Non OIE listed commodity recommendation)

C753 Strangles (*Steptococcus equi equi)*

(Non OIE listed-commodity recommendation)

Aquatic:

Removed non OIE listed diseases

Added: Crustacean N451 Necrotising hepatopancreatitis (OIE-listed 2016)

BOVINE	
A010	Foot-and-mouth disease (FMD)*
A020	Vesicular stomatitis (VS)
A040	Rinderpest*
A060	Contagious bovine pleuropneumonia (*Mycoplasma mycoides mycoides*)*
A070	Lumpy skin disease*
A080	Rift Valley fever*
A090	Bluetongue*
N001	Crimean Congo hemorrhagic disease*
2001	Akabane (congenital arthrogryposis-hydranencephalaly syndrome)
B051	Anthrax (*Bacillus anthracis*)*
B052	Aujesky's disease (Pseudorabies)*
B053	Echinococcosis / hydatidosis (*Echinococcus granulosus, E. multilocularis*)*
B055	Heartwater (*Cowdria ruminantium*)*
B057	Q Fever (*Coxiella burnetii*)*
B058	Rabies*
B059	Paratuberculosis (Johne's disease - (*Mycobacterium avium paratuberculosis*)*
B060	New World screwworm (*Cochliomyia hominivorax*)*
B061	Old World screwworm (*Chrysomya bezziana*)*
B101	Anaplasmosis (*Anaplasma marginale, A. centrale*)*
B102	Babesiosis (*Babesia bovis, B.bigemina*)*
B103	Bovine brucellosis (*B.abortus*)*
B152	Caprine and ovine brucellosis (*B. melitensis*)*
B253	Porcine brucellosis (*B.suis*)*
B104	Bovine genital campylobacteriosis (*Campylobacter fetus venerealis*)*
B105	Bovine tuberculosis (*Mycobacterium bovis*)*
N117	Bovine viral diarrhea (BVD)*
B108	Enzootic bovine leukosis (BLV)*
B109	Hemorrhagic septicemia (*Pasteurella multocida*, serotypes B/Asian or E/African)*
B110	Infectious bovine rhinotracheitis/infectious pustular vulvovaginitis (IBR/IPV)*
B111	Theileriasis (*Theileria annulata, T. parva*)*
B112	Trichomoniasis (*Tritrichomonas [Trichomonas] foetus*)*
B113	Trypanosomiasis (tsetse-transmitted)(*Trypanosoma congolense, T. vivax, T. brucei brucei, T. evansi*))*

B114	Malignant catarrhal fever (specify wildebeest or sheep form)
B115	Bovine spongiform encephalopathy (BSE)*
N158	Epizootic hemorrhagic disease (EHD)*
C613	Melioidosis (*Burkholderia pseudomallei*)

CAPRINE AND OVINE

A010	Foot-and-mouth disease (FMD)*
A020	Vesicular stomatitis (VS)
A040	Rinderpest*
A050	Peste des petits ruminants*
A080	Rift Valley fever*
A090	Bluetongue*
A100	Sheep pox and goat pox*
N001	Crimean Congo hemorrhagic disease*
2001	Akabane (congenital arthrogryposis-hydranencephalaly syndrome)
B051	Anthrax (*Bacillus anthracis*)*
B052	Aujesky's disease (Pseudorabies)*
B053	Echinococcosis / hydatidosis (*Echinococcus granulosus, E. multilocularis*)*
B055	Heartwater (*Cowdria ruminantium*)*
B057	Q Fever (*Coxiella burnetii*)*
B058	Rabies*
B059	Paratuberculosis (Johne's disease - *Mycobacterium avium paratuberculosis*)*
B060	New World screwworm (*Cochliomyia hominivorax*)*
B061	Old World screwworm (*Chrysomya bezziana*)*
B103	Bovine brucellosis (*B.abortus)**
B105	Bovine tuberculosis (*Mycobacterium bovis*)*
B111	Theileriasis (*Theileria annulata, T. parva*)*
B152	Caprine and ovine brucellosis (*B. melitensis*)*
B151	Ovine epididymitis (*Brucella ovis* infection)*
B153	Caprine arthritis / encephalitis (CAE)*
B154	Contagious agalactia (*Mycoplasma agalactiae, M. Capricolum capricolum, M. putrefaciens, M. mycoides mycoides, M. mycoides mycoides LC*)*
B155	Contagious caprine pleuropneumonia (*Mycoplasma capricolum capripneumoniae*)*
B156	Enzootic abortion of ewes (ovine chlamydiosis*, Chlamydophila abortus*)*
B158	Nairobi sheep disease*
B159	Salmonellosis (*Salmonella abortusovis*)*
B160	Scrapie*
B161	Maedi-visna/ovine progressive pneumonia*
B352	Tularemia (*Francisella tularensis*)*
N002	West Nile fever*
C613	Melioidosis (*Burkholderia pseudomallei*)
C706	Mange (*Sarcoptes scabiei var ovis, Chorioptes bovis, Psoroptes ovis, Psoroptes cuniculi, Psoregates ovis*)

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EQUINE

A020	Vesicular stomatitis (VS)

A110	African horse sickness*
B051	Anthrax (*Bacillus anthracis*)*
B053	Echinococcosis / hydatidosis (*Echinococcus granulosus, E. multilocularis*)*
B058	Rabies*
B060	New World screwworm (*Cochliomyia hominivorax*)*
B061	Old World screwworm (*Chrysomya bezziana*)*
B062	Trichinellosis (*Trichinella spp.*)*
B201	Contagious equine metritis (*Taylorella equigenitalis*)*
B202	Dourine (*Trypanosoma equiperadum*)*
N220	Equine encephalomyelitis (Eastern)*
N221	Equine encephalomyelitis (Western)*
B205	Equine infectious anemia (EIA)*
B206	Equine influenza*
B207	Equine piroplasmosis (babesiosis*, Babesia [Piroplasma] equi, B. caballi*)*
B208	Equine rhinopneumonitis (EHV- 1)*
B208a	Equine herpesvirus myeloencephalopathy (EHV1 - EHM)
B209	Glanders (*Pseudomonas mallei*)*
B211	Equine viral arteritis (EVA)*
B212	Japanese encephalitis*
B215	Surra (*Trypanosoma evansi*)*
B216	Venezuelan equine encephalomyelitis*
B352	Tularemia (*Francisella tularensis*)*
N002	West Nile fever*
W075	Hendra
C613	Melioidosis (*Burkholderia pseudomallei*)
C752	Pigeon fever (*Corynebacterium pseudotuberculosis, ulcerative lymphangitis)*
C753	Strangles (*Streptococcus equi equi*)

PORCINE

A010	Foot-and-mouth disease (FMD)*
A020	Vesicular stomatitis (VS)
A030	Swine vesicular disease
A040	Rinderpest*
A120	African swine fever*
A130	Classical swine fever (hog cholera)*
N258	Nipah virus encephalitis*
B051	Anthrax (*Bacillus anthracis*)*
B052	Aujesky's disease (Pseudorabies)*
B053	Echinococcosis / hydatidosis (*Echinococcus granulosus, E. multilocularis*)*
B058	Rabies*
B060	New World screwworm (Cochliomyia hominivorax)*
B061	Old World screwworm (Chyrsomya bezziana)*
B062	Trichinellosis (Trichinella spp.)*
B212	Japanese encephalitis*
B252	Infection with Taenia solium (Porcine Cysticercosis)*
B253	Porcine brucellosis (B. suis)*
B254	Transmissible gastroenteritis (TGE)*
B257	Porcine reproductive and respiratory syndrome (PRRS)*
B352	Tularemia (Francisella tularensis)*
C613	Melioidosis (Burkholderia pseudomallei)
2006	Vesicular exanthema

2010	Swine Enteric Coronavirus Disease (SECD) (Porcine epidemic diarrhea virus –PEDV; Porcine delta coronavirus (PDCoV)
AVIAN	
A150h	Highly pathogenic avian influenza (reporting of occurrence in all birds)*
A150i	Low pathogenic avian influenza (H5 or H7 subtypes)(Poultry only)*
A160	Newcastle dise ase (Exotic)(Domestic birds)*
N315	Turkey rhinotracheitis (Domestic birds)*
B301	Avian infectious bronchitis*
B302	Avian infectious laryngotracheitis*
B304	Duck viral hepatitis (Domestic birds)*
B308	Fowl typhoid (*Salmonella gallinarum*)*
B309	Infectious bursal disease (Gumboro disease)*
B311	Avian Mycoplasmosis (*Mycoplasma gallisepticum*)*
B312	Avian chlamydiosis (psittacosis and ornithosis, *Chlamydia psittaci*)*
B313	Pullorum disease (*Salmonella pullorum*)*
N316	Avian Mycoplasmosis (*Mycoplasma synoviae*)*
AQUATIC	
B401	Fish: Viral hemorrhagic septicemia (VHS)*
N416	Fish: Infectious salmon anemia (ISA)(HPR-deleted)*
N416a	Fish: Infectious salmon anemia (ISA)(HPR0)*
B404	Fish: Spring viremia of carp (SVC)*
B405	Fish: Infectious hematopoietic necrosis (IHN)*
B413	Fish: Epizootic hematopoietic necrosis disease*
N417	Fish: Epizootic ulcerative syndrome (EUS) (Infection with *Aphanomyces invadans)**
N418	Fish: Gyrodactylosis (*Gyrodactylus salaris*)*
N419	Fish: Red sea bream iridoviral disease*
N420	Fish: Koi herpesvirus disease*
2011	Fish: Infection with salmonid alphavirus*
N430	Mollusc: Infection with *Bonamia ostreae**
N431	Mollusc: Infection with *Bonamia exitiosa**
N432	Mollusc: Infection with *Marteilia refringens**
N433	Mollusc: Infection with *Perkinsus marinus**
N434	Mollusc: Infection with *Perkinsus olseni**
N435	Mollusc: Infection with Xenohaliotis californiensis*
N436	Mollusc: Infection with abalone herpes virus*
N450	Crustacean: Taura syndrome*
N451	Crustacean: White spot disease*
N446	Crustacean: Necrotising hepatopancreatitis (Candidatus Hepatobacter penaei)(NHP, early mortality syndrome)*
N452	Crustacean: Yellowhead (Infection with Yellowhead virus genotype 1)*
N455	Crustacean: Infectious hypodermal and haematopoietic necrosis*
N456	Crustacean: Crayfish plague (Aphanomyces astaci)*
N457	Crustacean: Infectious myonecrosis*
N458	Crustacean: White tail disease*
N459	Crustacean: Acute hepatopancreatic necrosis disease (V.parahemolyticus pVA-1 plasmid)*
FARMED CERVIDS	
A010	Foot-and-mouth disease (FMD)*
A020	Vesicular stomatitis (VS)
A040	Rinderpest*
A080	Rift Valley fever*

N001	Crimean Congo hemorrhagic fever*
2001	Akabane (congenital arthrogryposis-hydranencephalaly syndrome)
A090	Bluetongue*
B051	Anthrax (*Bacillus anthracis*)*
B052	Aujesky's disease (Pseudorabies)*
B053	Echinococcosis / hydatidosis (*Echinococcus granulosus, E. multilocularis*)*
B055	Heartwater (*Cowdria ruminantium*)*
B057	Q Fever (*Coxiella burnetii*)*
B058	Rabies*
B059	Paratuberculosis (Johne's disease - *Mycobacterium avium* paratuberculosis)*
B060	New World screwworm (*Cochliomyia hominivorax*)*
B061	Old World screwworm (*Chyrsomya bezziana*)*
B103	Bovine brucellosis (*B. abortus*)*
B152	Caprine and ovine brucellosis (*B. melitensis*)*
B253	Porcine brucellosis (*B. suis*)*
B105	Bovine tuberculosis (*Mycobacterium bovis*)*
B114	Malignant catarrhal fever
N156	Chronic wasting disease (CWD)
N158	Epizootic hemorrhagic disease (EHD)*
C613	Melioidosis (*Burkholderia pseudomallei*)

LAGOMORPH (Rabbits and Hares)

B351	Myxomatosis*
B352	Tularemia (*Francisella tularensis*)*
B353	Rabbit hemorrhagic disease*

OTHER DISEASES

B501	Leishmaniosis*
N502	Camelpox*

AMPHIBIAN DISEASES

N601	Infection with *Batrachochytrium dendrobatidis**
N602	Infection with ranavirus*

BEE (APIARY) (optional reporting requirement as other agencies responsible)

B451	Acarapisosis of honey bees (Infestation with *Acarapis woodi)**
B452	American foulbrood of honey bees (Infection with *Paenibacillus larvae)**
B453	European foulbrood of honey bees (Infection with *Melissococcus plutonius)**
B455	Varroosis of honey bees (Infestation with *Varroa spp.)**
2008	Tropilaelaps infestation of honey bees (Infestation with *Tropilaelaps spp.)**
2009	Small hive beetle infestation (Infestation with *Aethina tumida*)*

Appendix 2. U.S. Status of OIE Reportable Disease Events in 2017

The following tables show the U.S. status for animal diseases that are reported to the OIE if they are confirmed present in specific livestock, poultry, and aquaculture species. This information is reported to OIE every 6 months and is also presented on the international OIE website.

Terrestrial Animal Diseases

Diseases Associated with Multiple Species

Disease	Status	Date of Last Occurrence / Notes
Anthrax	Present	Sporadic / limited distribution
Aujeszky's disease (pseudorabies)	Present	Sporadic / limited distribution in feral and/or non-commercial production swine. Non-commercial swine: swine managed under biosecurity conditions that allow for potential exposure to feral swine that may be infected with swine diseases, such as pseudorabies. National eradication program. No commercial production swine herd detections in 2017
Bluetongue	Present	Sporadic
Brucellosis (*Brucella abortus*)	Present	Sporadic / limited distribution. Primarily limited to free-ranging bison (*Bison bison*) and wapiti (*Cervus canadensis*) in the Greater Yellowstone National Park area/national eradication program
Brucellosis (*Brucella melitensis*)	Free	1999
Brucellosis (*Brucella suis*)	Present	Sporadic / limited distribution in feral and/or non-commercial production swine. Non-commercial swine: swine managed under biosecurity conditions that allow for potential exposure to feral swine that may be infected with swine diseases, such as brucellosis. *B. suis*, biovar 4 is endemic in wild caribou (*Rangifer tarandus*) herds in Alaska, and biovar 1 is endemic in feral swine in several States. National eradication program. No commercial production swine herd detections in 2017.
Crimean Congo haemorrhagic fever	Free	Never occurred
Echinococcosis/hydatidosis (*Echinococcosis granulosus, E. multilocularis)*	Present?	Suspected. Last detected in 2008.
Epizootic hemorrhagic disease (EHD)	Present	Sporadic
Equine encephalomyelitis (Eastern)	Present	Sporadic / limited distribution
Foot-and-mouth disease	Free	1929
Heartwater	Free	Never occurred
Japanese encephalitis	Free	Never occurred
New world screwworm	Present	One event in 2017 limited to the Florida Keys – infestation in Key deer. There was no NWS myiasis in any production livestock. Eradicated in early 2017 using sterile flies.
Old world screwworm	Free	Never occurred
Paratuberculosis (Johne's disease)	Present	Voluntary control program
Q fever	Present	Sporadic
Rabies	Present	
Rift Valley fever	Free	Never occurred
Rinderpest	Free	Never occurred
Surra (*Trypanosoma evansi*)	Free	Never occurred
Trichinellosis	Present?	Sporadic occurrence in backyard raised swine and wild species. No commercial production swine herd detections in 2017.
Tularemia	Present (wild)	Sporadic in wild populations. Last domestic detection was in 2009.
West Nile fever/encephalitis	Present	

Avian Diseases

Disease	Status	Date of Last Occurrence / Notes
Avian chlamydiosis	Present	Sporadic occurrence in wild birds, pet birds, and backyard birds only. No commercial production flock detections in 2017.
Avian infectious bronchitis	Present	
Avian infectious laryngotracheitis	Present	
Avian mycoplasmosis (*M. gallisepticum)*	Present	Sporadic occurrence. All commercial poultry breeding flocks are under a surveillance program to confirm infection-free status. Commercial table-egg laying hens may be vaccinated. The "finch strain" of MG occurs in wild passerine birds, primarily house finches (*Carpodacus mexicanus*), in which it causes conjunctivitis. This strain has been shown experimentally to be nonpathogenic in chickens.
Avian mycoplasmosis (*M. synoviae*)	Present	Sporadic occurrence. All commercial poultry breeding flocks are under a surveillance program to confirm infection-free status.
Duck viral hepatitis	Free	1998
Fowl typhoid (*Salmonella gallinarum)*	Free	1981
Highly pathogenic avian influenza	Present	Two events reported to the OIE in 2017. 1) H7N9 in commercial chicken broiler-breeder flock, closed 8/2017. 2) Identification of H5N2 in a wild mallard duck, closed 3/2017.
Low pathogenic avian influenza (poultry) Notifiable H5 and H7	Present	Identified sporadically in backyard poultry and in live-bird-markets that serve local ethnic communities. Two LPAI events reported to the OIE in 2017. 1) H7N9 in chicken flocks, resolved 6/2017. 2) H5N2 in a commercial turkey flock, resolved 6/2017.
Infectious bursal disease (Gumboro disease)	Present	Sporadic
Newcastle disease (Neurotropic and viscerotropic strains)	Present (wild)	Sporadic detections in wild birds. Domestic poultry are considered free – last detection was in 2003.
Pullorum disease (*Salmonella pullorum)*	Present	Sporadic detections in backyard flocks. No commercial production flock detections since 1991, considered absent in them.
Turkey rhinotracheitis	Present?	Disease suspected but not confirmed in limited zones/regions of the country.

Bee Diseases

Disease	Status	Date of Last Occurrence / Notes
Acarapisosis of honey bees (*Acarapis woodi*)	Present	Sporadic / limited distribution
American foulbrood of honey bees (*Paenibacillus larvae*)	Present	
European foulbrood of honey bees (*Melissococcus plutonius*)	Present	
Small hive beetle infestation (*Aethina tumida)*	Present	
Tropilaelaps infestation of honey bees (*Tropilaelaps* spp.)	Free	Never occurred
Varroosis of honey bees (*Varroa* spp.)	Present	

Cattle Diseases

Disease	Status	Date of Last Occurrence / Notes
Bovine anaplasmosis	Present	
Bovine babesiosis	Free	Last occurrence on the U.S. mainland was in 1943. Endemic in territories of Puerto Rico and the U.S. Virgin Islands
Bovine genital campylobacteriosis	Present	Sporadic

Bovine spongiform encephalopathy	OIE-Negligible Risk status	One detection of atypical BSE reported to the OIE in 2017. Atypical BSE is an uncommon form of the agent not generally associated with an animal consuming infected feed.
Bovine tuberculosis	Present	Sporadic / limited distribution. National eradication program.
Bovine viral diarrhea	Present	
Contagious bovine pleuropneumonia (*Mycoplasma mycoides* subsp. *mycoides* SC)	Free	1892
Enzootic bovine leukosis	Present	
Haemorrhagic septicaemia (*Pasteurella multocida,* serotypes B/Asian or E/African)	Absent	1969
Infectious bovine rhinotracheitis/ infectious pustular vulvovaginitis	Present	
Lumpy skin disease	Free	Never occurred
Theileriosis	Free	Never occurred
Trichomonosis	Present	
Trypanosomosis (tsetse-transmitted)	Free	Never occurred

Equine Diseases

Disease	Status	Date of Last Occurrence / Notes
African horse sickness	Free	Never occurred
Contagious equine metritis	Free	2014
Dourine	Free	1934
Equine encephalomyelitis (Western)	Present?	No equine detections reported the last 20 years
Equine infectious anemia	Present	Sporadic / limited distribution. National control program
Equine influenza	Present	Sporadic
Equine piroplasmosis	Present	Sporadic / limited distribution. Iatrogenic transmission cases only. No cases of natural tick-borne transmission identified since 2009 (single outbreak – eradicated).
Equine herpesvirus-1 (EHV-1)	Present	
Equine viral arteritis	Present	Sporadic
Glanders	Free	1942
Venezuelan equine encephalomyelitis	Free	1971

Lagomorph Diseases

Disease	Status	Date of Last Occurrence / Notes
Myxomatosis	Present	Sporadic / limited distribution in wild rabbits
Rabbit hemorrhagic disease	Free	2010

Sheep and Goat Diseases

Disease	Status	Date of Last Occurrence / Notes
Caprine arthritis/encephalitis	Present	
Contagious agalactia	Present	Sporadic / limited distribution
Contagious caprine pleuropneumonia	Free	Never occurred

Enzootic abortion of ewes (ovine chlamydiosis, *Chlamydophila abortus*)	Present	Sporadic
Maedi-visna	Present	Sporadic
Nairobi sheep diseases	Free	Never occurred
Ovine epididymitis (*Brucella ovis)*	Present	
Peste des petits ruminants	Free	Never occurred
Salmonellosis (*S. abortus ovis*)	Present	Sporadic / limited distribution
Scrapie	Present	Sporadic occurrence. National eradication program.
Sheep pox and goat pox	Free	Never occurred

Swine Diseases

Disease	Status	Date of Last Occurrence / Notes
African swine fever	Free	Never occurred
Classical swine fever (hog cholera)	Free	1976
Nipah virus encephalitis	Free	Never occurred
Porcine cysticercosis	Free	2004
Porcine reproductive and respiratory syndrome	Present	
Transmissible gastroenteritis	Present	

Other Listed Diseases

Disease	Status	Date of Last Occurrence / Notes
Leishmaniosis	Present	Sporadic occurrence in canines
Camelpox	Free	Never occurred

Aquatic Animal Diseases

Amphibian Diseases

Disease	Status	Date of Last Occurrence / Notes
Infection with *Batrachochytrium dendrobatidis*	Present	
Infection with ranavirus	Present (wild)	

Aquaculture Diseases – Crustaceans

Disease	Status	Date of Last Occurrence / Notes
Acute hepatopancreatic necrosis disease	Present	One event reported to the OIE in 2017, resolved 12/2017
Crayfish plague (*Aphanomyces astaci*)	Absent	
Infectious hypodermal and haematopoietic necrosis	Absent	
Infectious myonecrosis	Free	Never occurred
Necrotising hepatopancreatitis	Free	
Taura syndrome	Free	2007 – Domestic
White spot disease	Present? (wild)	Suspected but not confirmed in wild populations in limited geographical regions/zones. Domestic populations considered free, last detection was in 2012.
White tail disease	Free	Never occurred
Yellowhead disease	Free	Never occurred

Aquaculture Diseases - Fish

Disease	Status	Date of Last Occurrence / Notes
Epizootic hematopoietic necrosis (EHN)	Free	Never occurred
Infection with *Aphanomyces invadans* (Epizootic ulcerative syndrome, EUS)	Present (wild)	Sporadic occurrence / limited distribution in wild populations. Absent in domestic populations, last detection was in 2004.
Gyrodactylosis (*Gyrodactylus salaries)*	Free	Never occurred
Infectious hematopoietic necrosis (IHN)	Present (wild)	Sporadic occurrence / limited distribution in wild populations. Free in domestic populations, last detection was 2015.
Infectious salmon anemia, ISA (HPR-deleted or HPR0)	Absent HPR-deleted	ISAV HPR0 detected through routine surveillance in healthy fish, no detections of ISAV HPR-deleted.
Koi herpesvirus disease (KHV)	Present	
Red sea bream iridoviral disease	Free	Never occurred
Salmonid alphavirus (SAV)	Free	Never occurred
Spring viremia of carp (SVC)	Present? (Wild)	Suspected but not confirmed in wild populations in limited geographical regions/zones. Absent in domestic populations, last detection was in 2004.
Viral hemorrhagic septicaemia (VHS)	Present (Wild)	Sporadic / limited distribution in wild populations. Never occurred in domestic populations.

Aquaculture Diseases – Molluscs

Disease	Status	Date of Last Occurrence / Notes
Infection with abalone herpes virus	Free	Never occurred
Infection with *Bonamia exitiosa*	Present? (wild)	Suspected but not confirmed in wild populations in limited geographical regions/zones. Free in domestic populations, last detection was in 2015.
Infection with *Bonamia ostreae*	Present? (wild)	Suspected but not confirmed in wild populations in limited geographical regions/zones. Free in domestic populations, last detection was in 2006.
Infection with *Marteilia refringens*	Free	Never occurred
Infection with *Perkinsus marinus*	Present	Sporadic / limited distribution
Infection with *Perkinsus olseni*	Free	Never occurred
Infection with *Xenohaliotis californiensis*	Present	Sporadic/ limited distribution

Status of Animal Diseases in the United States of America

Present = occurrence of the disease reported

Free = no occurrence in the U.S. of the OIE-listed disease

Present? = occurrence suspected but not confirmed

Absent = disease absent during the reporting period/no detections reported

Sporadic = occurring only occasionally

Limited distribution = limited geographic distribution