

**Final Report for the 2017 Outbreak
of Highly Pathogenic Avian Influenza (HPAI)/
Low Pathogenicity Avian Influenza (LPAI)
in the Southeastern United States**
August 8, 2017



USDA Animal and Plant Health Inspection Service
Veterinary Services
National Preparedness and Incident Coordination

Overview

- This presentation summarizes the 2017 HPAI/LPAI outbreak in the southeastern United States.
- Many thanks to the numerous individuals and groups that contributed to this outbreak's successful response.
- To view the full report, please visit: www.aphis.usda.gov/fadprep and select HPAI Response and Policy Information.

Nature of Disease

- Avian influenza (AI) is an infectious disease of birds including poultry, such as chickens and turkeys.
 - AI can also infect other mammals, such as pigs, cats, and *rarely* humans.
- At times, AI can be fatal.
- Influenza A viruses are broadly categorized based on a combination of two groups of proteins:
 - hemagglutinin or “H” proteins (H1-H16), and
 - neuraminidase or “N” proteins (N1-N9).
- Transmission typically occurs through direct contact as well as indirect contact with fomites.

HPAI and LPAI

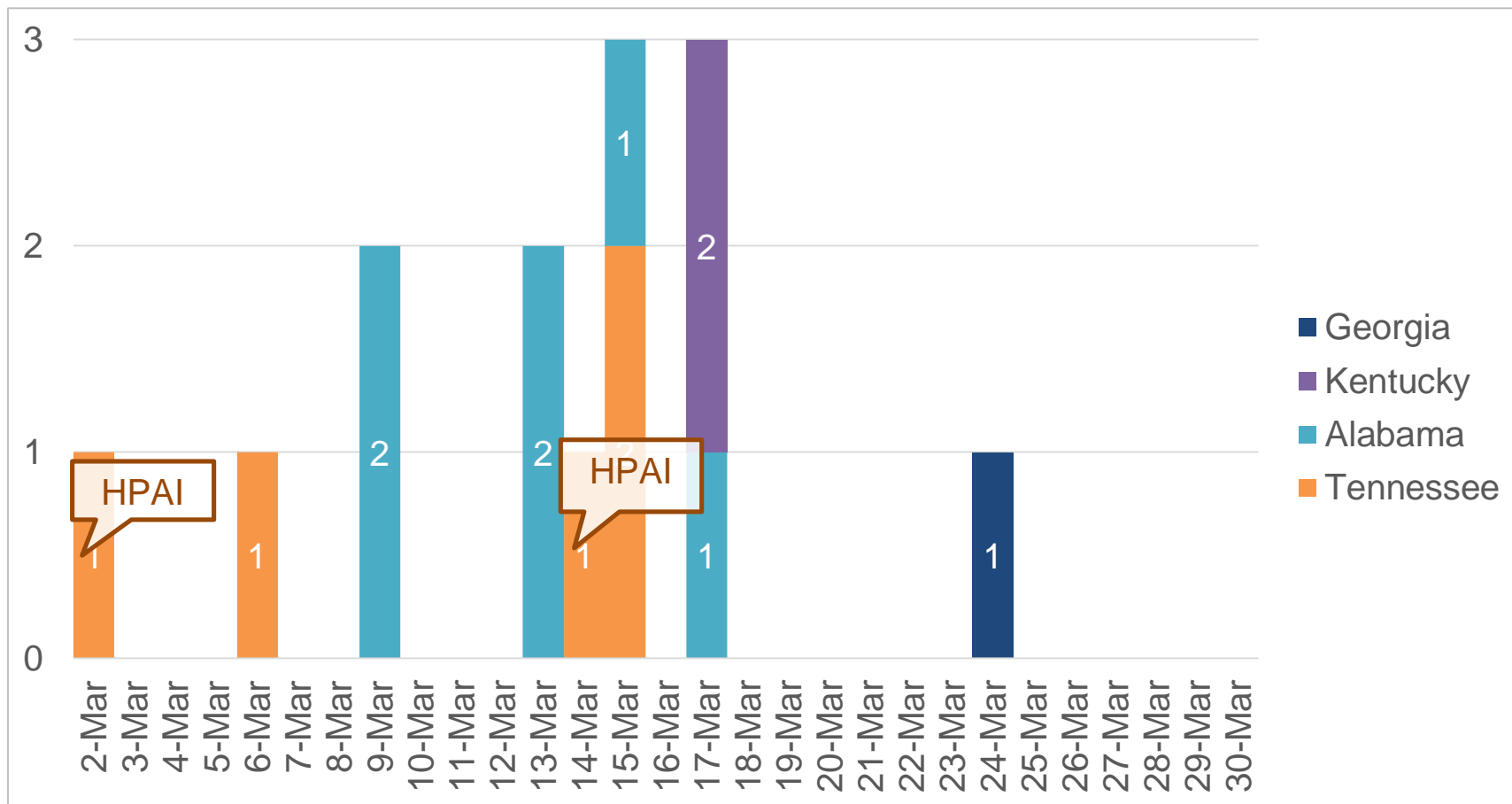
- Waterfowl are natural reservoirs for AI viruses, but most infections of wild birds are asymptomatic.
- Based on the severity of illness in chickens and the genetic features of the virus, the disease is classified as either HPAI or LPAI.
- Any HPAI and all H5 and H7 subtypes from poultry are reportable; H5 and H7 subtypes have the potential to change from LPAI to HPAI during infections in domestic poultry.



Incident Timeline

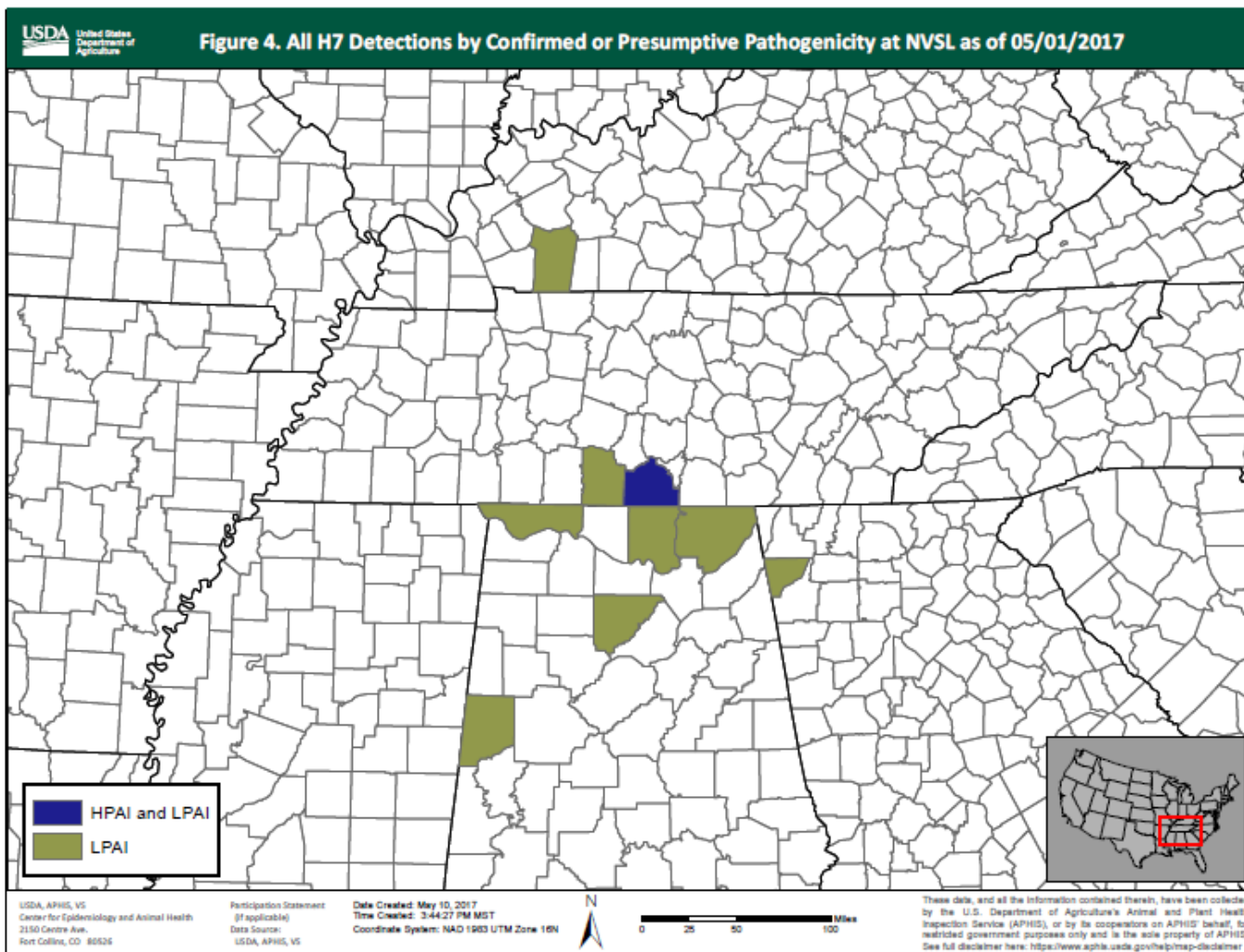
- **March 3, 2017:** Samples from a flock with clinical signs in Lincoln County, Tennessee, were presumptive positive for H7 influenza at a National Animal Health Laboratory Network (NAHLN) lab.
- **March 4, 2017:** National Veterinary Services Laboratories (NVSL) confirmed HPAI on the premises. The virus was subsequently identified as H7N9 of North American wild bird lineage (unrelated to Asian H7N9 viruses).
- **March 8, 2017:** NVSL confirmed LPAI H7N9 in a neighboring Tennessee county.
- **March 25, 2017:** Between March 8th and March 25th, NVSL confirmed H7 or H7N9 on 14 premises. HPAI was confirmed on 2 of these premises, both in Lincoln County, Tennessee.

Epidemiological Curve by Earliest Known Date of Infection per State*



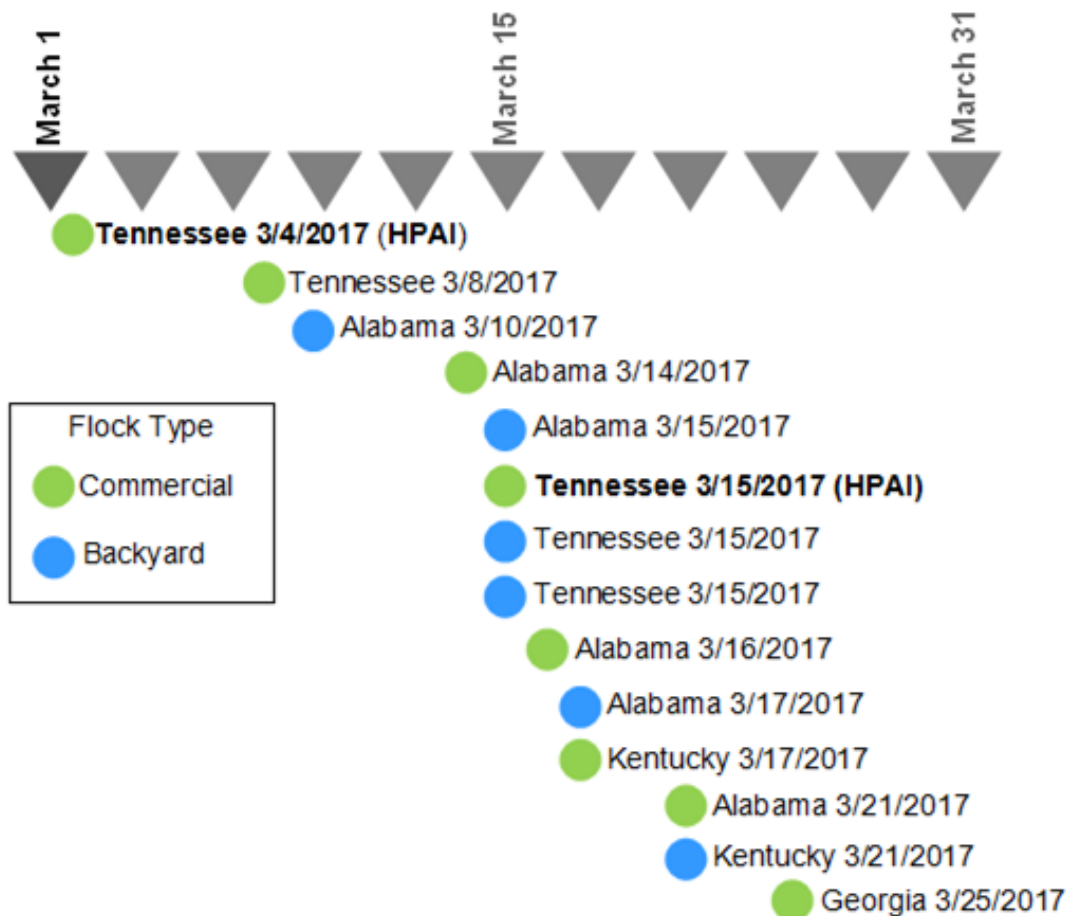
*This may be the date clinical signs were observed, when the suspect case definition was met, or when there was a presumptive positive result at a NAHLN laboratory.

Affected Counties in the 2017 H7 Outbreak



Note: Map produced during the incident by the USDA APHIS VS Center for Epidemiology and Animal Health.

2017 H7 Detections by Flock Type and by NVSL Confirmation Date*



*NVSL confirmation date is the first date of confirmatory test result from NVSL. Pathogenicity was not confirmed in some of the detections.

Scope of the Outbreak

- Of the 14 Infected Premises, nearly 253,000 birds were depopulated as part of the HPAI and LPAI detections, or had succumbed to the HPAI virus.
- Nearly 99 percent of these birds were in commercial broiler breeder flocks.
- The 2017 incident provided yet another opportunity to test AI preparedness and response procedures along with improved processes.
- While challenges still remain, the lessons learned from the 2014–2015 outbreak and the 2016 outbreak helped USDA Animal and Plant Health Inspection Service (APHIS), States, and industry mount an effective and rapid response to this HPAI/LPAI incident.

Transmission

- USDA APHIS, in collaboration with APHIS Wildlife Services and the affected States, conducted epidemiologic, genetic, and wildlife investigations.
- Based on molecular and epidemiological evidence, it appears there was lateral spread between the first and the second HPAI Infected Premises.
- However, for LPAI, the evidence suggests multiple, independent introductions.
- In 2017, risk factors for virus introduction included:
 - the presence of rodents or other wild mammals,
 - the presence of waterfowl,
 - condition of the poultry housing, and
 - gaps in biosecurity protocols (particularly allowing entry of the virus from the environment into the barn).

Transmission in Wild Birds

- H7 influenza A viruses are known to circulate in low pathogenicity forms among wild waterfowl.
- Testing of >400 samples from wild birds and small mammals around the Infected Premises did not detect H7N9 virus.
- Introduction was likely several weeks prior to detection.
- However, a highly similar virus was found in a blue-winged teal from Wyoming in September 2016.



For more information, please see the USDA APHIS *VS Epidemiologic and Other Analyses of HPAI/LPAI Affected Poultry Flocks* from the Center for Epidemiology and Animal Health available, [here](#).

Overview of Response Effort

- A unified State-Federal Incident Command (Tennessee, Alabama, and USDA APHIS) responded to the HPAI detections and the LPAI detections related to the initial HPAI findings.
- A unified Incident Command Post was established in Nashville, Tennessee.
- Kentucky and Georgia managed their LPAI Infected Premises with support from VS Surveillance Preparedness and Response Services (SPRS) District 2 and 3, as requested.
 - Per 9 CFR 56, LPAI response—including the disposition of Infected Premises—is under the jurisdiction and authority of the States; States request assistance from USDA APHIS as needed.
- For policy guidance and resource coordination, the HPAI Incident Coordination Group (ICG) at APHIS headquarters was ramped up.

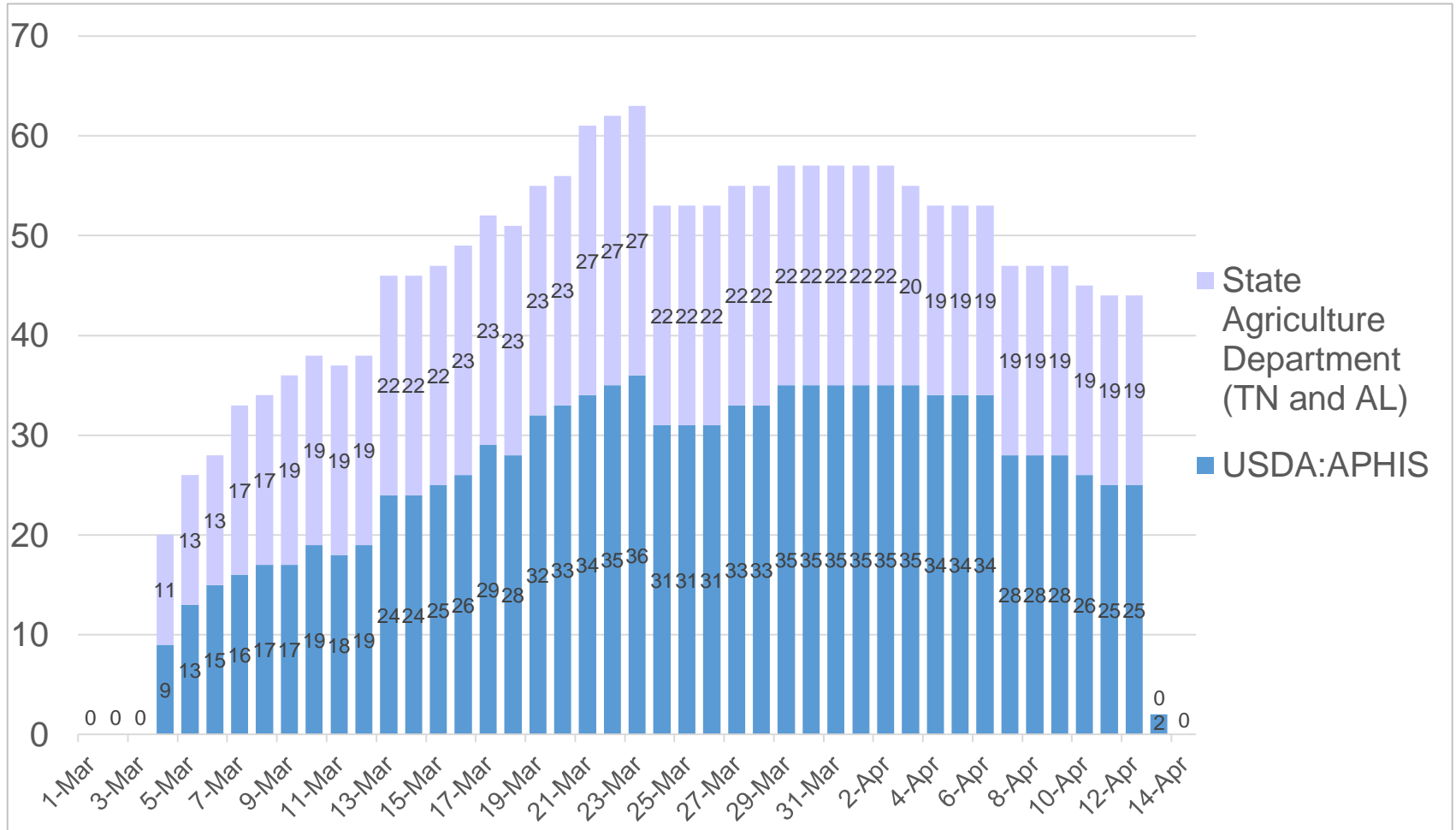
Incident Management

- SPRS District 2 personnel filled the role of an IMT and deployed to the unified Incident Command Post.
 - A full VS National Incident Management Team was not deployed in this response.
- The IMT and unified Incident Command routed requests for information and resources through the HPAI ICG.
- The HPAI ICG managed incident coordination and resource requests.
- The VS Executive Team was responsible for strategic policy and procedures and provided assistance as requested by the HPAI ICG.
 - A Multiagency Coordination Group was not needed, but remained on-call.

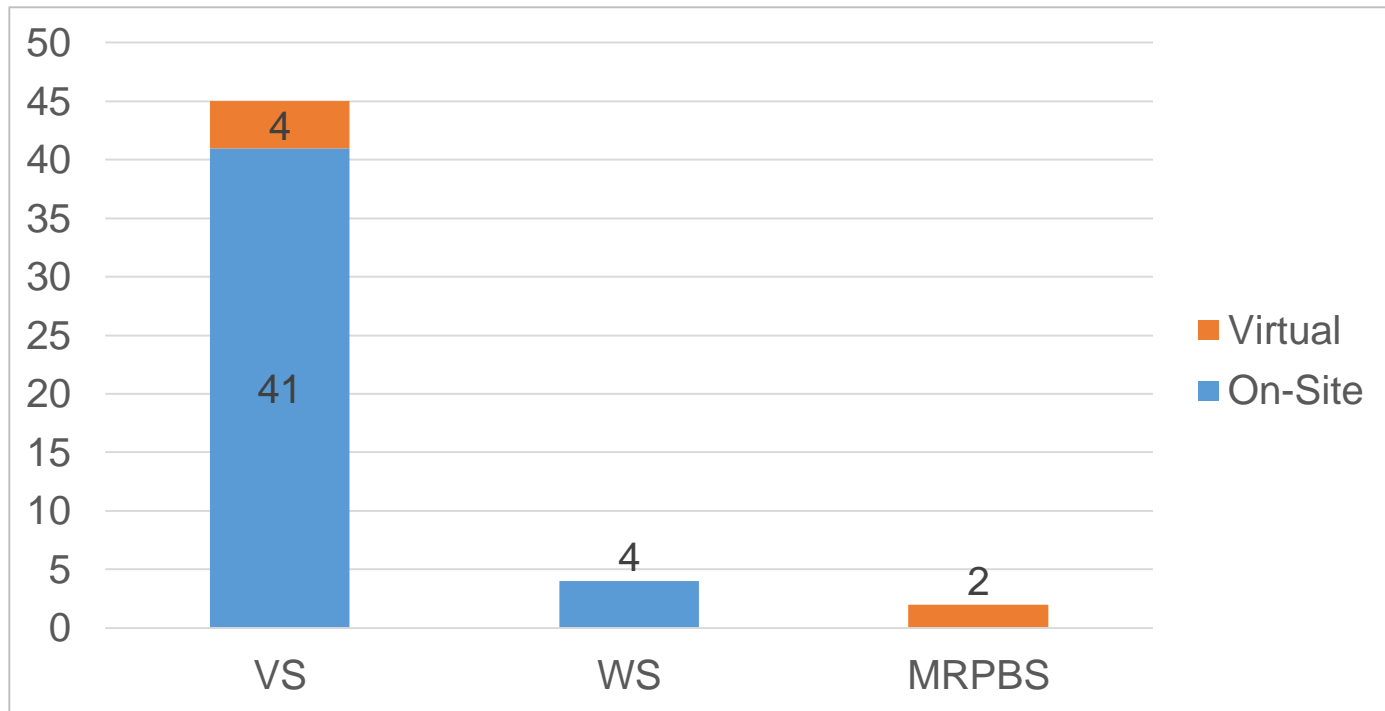
Personnel

- For the entire incident, there were 51 total deployments of APHIS personnel.
 - Of the 51 APHIS deployments, 45 (88 percent) were on-site.
 - Of the 45 VS deployments, 41 (91 percent) were from SPRS.
 - Of the 41 SPRS deployments, 34 (83 percent) were District 2 personnel.
- Of the 51 deployments, 10 (20 percent) were term-hires.
- There were 19 on-site deployments for the State of Tennessee; Alabama had 10 on-site deployments.
- At the height of response operations, there were on average 75 personnel deployed on any given day (including APHIS, State, local, and contracted personnel).
- In addition, 49 APHIS personnel (virtual or at hubs), supported the HPAI ICG.

Total Number of APHIS and State Personnel Deployed per Day

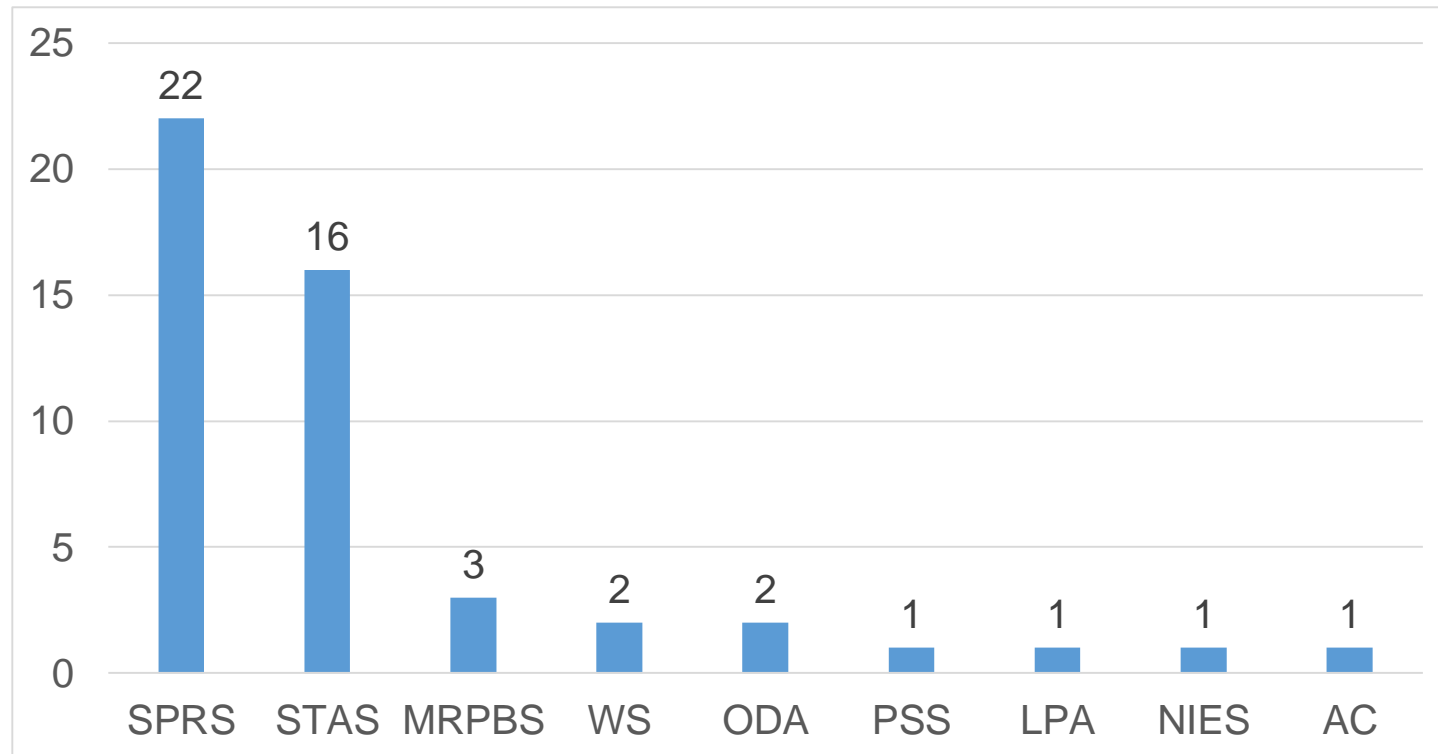


Total Number of APHIS Personnel Deployed to the Field by Organizational Unit



Note: VS= Veterinary Services, WS = Wildlife Services, and MRPBS = Marketing and Regulatory Program Business Services.

Total Number of APHIS Personnel Assigned to the National ICG at APHIS Hub or Home Location, by Organizational Unit

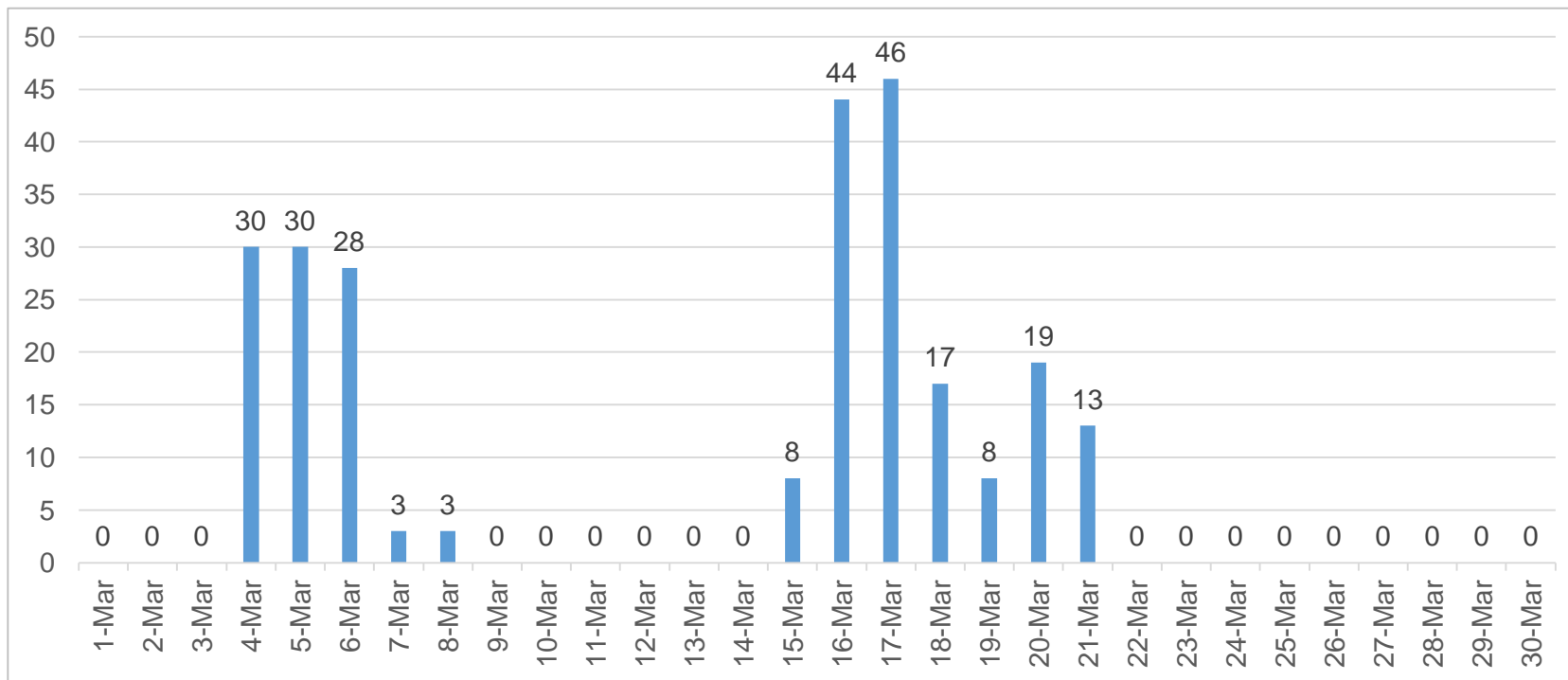


Note: SPRS = Surveillance, Preparedness, and Response Services; STAS = Science, Technology, and Analysis Services; MRPBS = Marketing and Regulatory Program Business Services; WS = Wildlife Services; ODA= Office of the VS Deputy Administrator; PSS = Program Support Services; LPA = Legislative and Public Affairs; NIES = National Import Export Services; AC = Animal Care.

Contractors

- Additional support to both the unified Incident Command and HPAI ICG was provided by contractors.
- Part-time personnel supported the HPAI ICG; APHIS-hired contractors worked to support the unified Incident Command personnel in the field, providing services and materials relating to depopulation and disposal of the HPAI-infected flocks.
- LPAI Infected Premises that depopulated did so with their own resources (company or contracted); APHIS-hired contractors did not support these operations.

Contractor Support for Response Operations for HPAI Infected Premises



Note: This figure only included contractors hired by the SPRS Logistics Center/National Veterinary Stockpile (NVS) for the HPAI Infected Premises.

Overview of Response Activities

- HPAI Infected Premises depopulated using foam.
- LPAI Infected Premises depopulated using a variety of methods (ventilation shutdown was not implemented).
- Twelve premises depopulated some or all of their birds.
 - All premises that depopulated birds used burial as their method of disposal.
 - Eleven premises conducted virus elimination; 7 of 11 used wet disinfectant for virus elimination (including both HPAI Infected Premises).
- On average, it took premises 48 days from NVSL confirmation to restock approval (range of 23 to 92 days); HPAI premises took on average 87 days.

Surveillance and Diagnostics Summary

- Commercial premises were rapidly identified and sampled in the HPAI Control Areas and Surveillance Zones.
- Door-to-door surveillance was conducted to identify all backyard premises in the HPAI Control Area and Surveillance Zones.
- For HPAI detections, there were 109 premises sampled (Alabama & Tennessee); this includes all surveillance in the Control Areas, Surveillance Zones, as well as other surveillance that occurred (e.g., voluntary industry testing and pre-movement testing).
- For LPAI detections, there were 435 premises sampled (Alabama, Georgia, Kentucky, & Tennessee); this includes all surveillance in the Surveillance Zones, as well as other surveillance that occurred (e.g., voluntary industry testing and pre-movement testing).
- Laboratory services (NVSL and State operated NAHLN labs) were a major component of the response effort, for both initial diagnostics and surveillance activities.

Appraisal and Compensation Summary

- As in the 2016 outbreak, processes developed as a result of challenges during the 2014–2015 outbreak were implemented.
- Indemnity payments for the 2 HPAI Infected Premises were rapidly distributed.
- Owners and growers of LPAI-infected flocks that made the decision to depopulate, in coordination with State officials, were *not* indemnified by APHIS.
- Flat-rate payments were distributed to HPAI Infected Premises for virus elimination activities.
- LPAI Infected Premises that elected to depopulate and completed disposal and virus elimination activities were *not* compensated by APHIS.

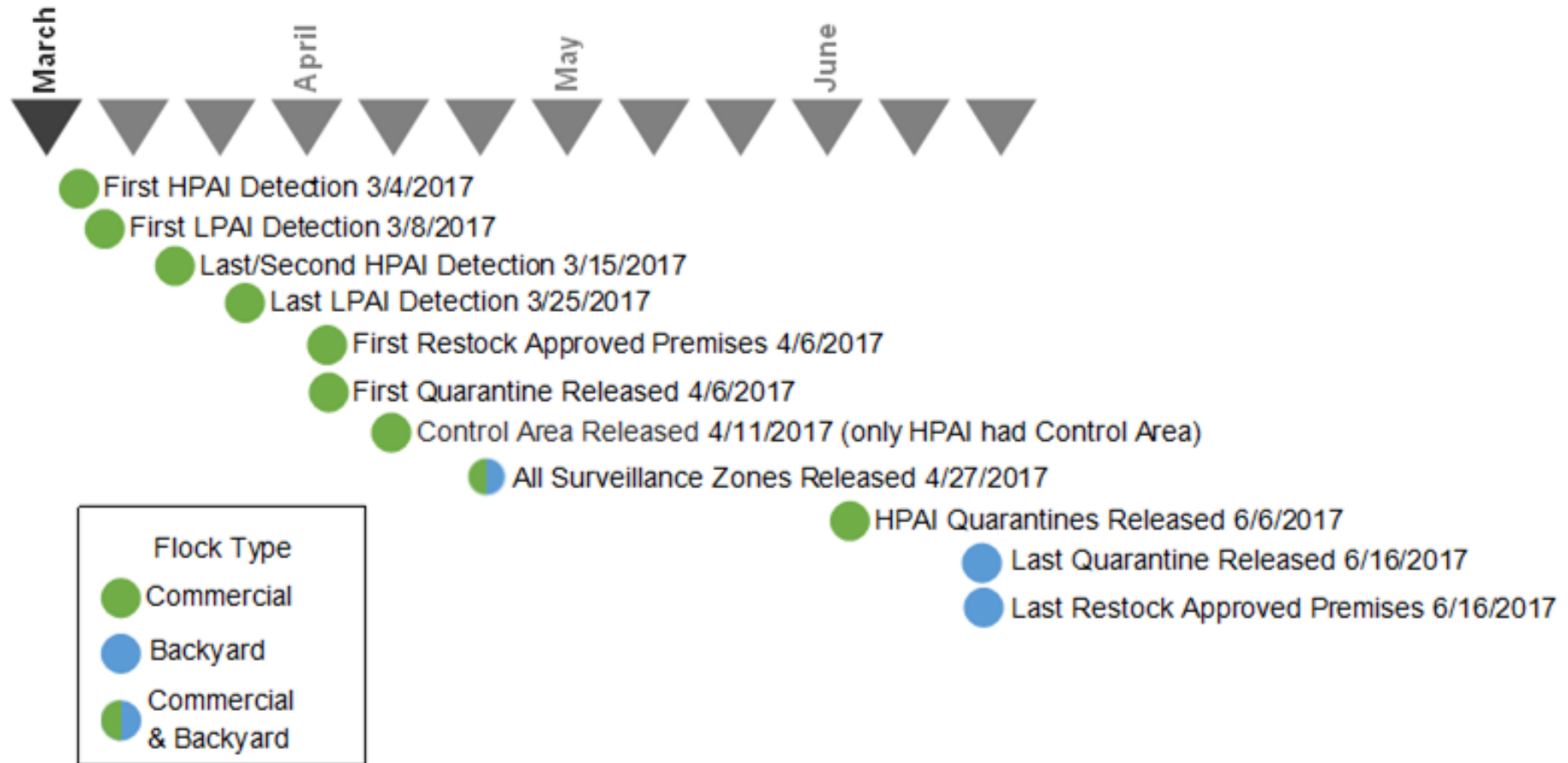
Permit and Movement Summary

- Permits were issued using the Emergency Management Response System 2.0 (EMRS2) and the EMRS2 Customer Permit Gateway.
- In total, 19 permits were issued resulting in 103 distinct movements.
- Movements were made direct to farms, direct to hatcheries, direct to slaughter, and into commerce.
 - Movements to a farm accounted for 90 percent of all movements.
- The majority of movements were within the Control Area.
- Of the movements, 98 percent originated in Tennessee.

End of Outbreak and Cost

- Incident was restricted in size and scope.
 - 4 States (AL, KY, GA, & TN)
 - HPAI: 2 Infected Premises (single county)
 - LPAI: 12 Infected Premises (confirmed or presumptive; 6 commercial flocks, 6 backyard flocks)
- Response operations, including virus elimination, environmental sampling, and restocking approvals were completed throughout late spring.
- **April 11, 2017:** The Control Area was released after 28 days.
- **April 27, 2017:** All Surveillance Zones were released.
- **June 16, 2017:** Last Infected Premises quarantine was released.
- USDA obligated \$2.79 million to pay for indemnity and response activities.
 - LPAI Infected Premises that depopulated did not receive APHIS indemnity funds or compensation for virus elimination activities.

Summary of Key Events during the 2017 Outbreak



Note: NVSL confirmation date is when a “confirmed status” was placed on the premises in EMRS2, based on a positive diagnostic test result at NVSL. For this outbreak, this was the date of the first confirmatory result from NVSL.

Economic and Trade Impact

- Approximately 11 countries imposed restrictions on poultry and/or poultry products from the entire United States.
- Most countries chose a regionalization approach.
- Such regionalization decisions helped to significantly limit the economic impact of this incident.
- Notably, some countries still are imposing restrictions from previous HPAI outbreaks in the United States.

Ongoing Challenges

- While this outbreak was small in scale, there were still unique challenges, which included:
 - confirming sufficient numbers of personnel are medically cleared and fit-tested, and that information is readily available.
 - ensuring NAHLN laboratories can electronically message diagnostic test results to LMS to automatically integrate with other data in EMRS2; staff proficiency in EMRS2.
 - assigning a site manager to monitor biosecurity compliance.
 - rapid deployment of personnel and functioning equipment and resource/personnel tracking post-deployment.
 - streamlining epidemiological investigations.
 - clarifying procedures for LPAI detections and surveillance in a HPAI/LPAI incident.

Policy Updates

- Additionally, there is revised guidance as a result of the continued planning efforts to respond to HPAI.
- Some notable updates include:
 - *HPAI Response Plan: The Red Book*
 - New State Checklist
 - Post C&D Environmental Sampling Guide.
- To see these documents, and to stay current with all HPAI policy guidance and updates, please visit www.aphis.usda.gov/fadprep (go to the HPAI page).