Highly Pathogenic Avian Influenza (H5N1) 2022-2025

H5N1 Webinar

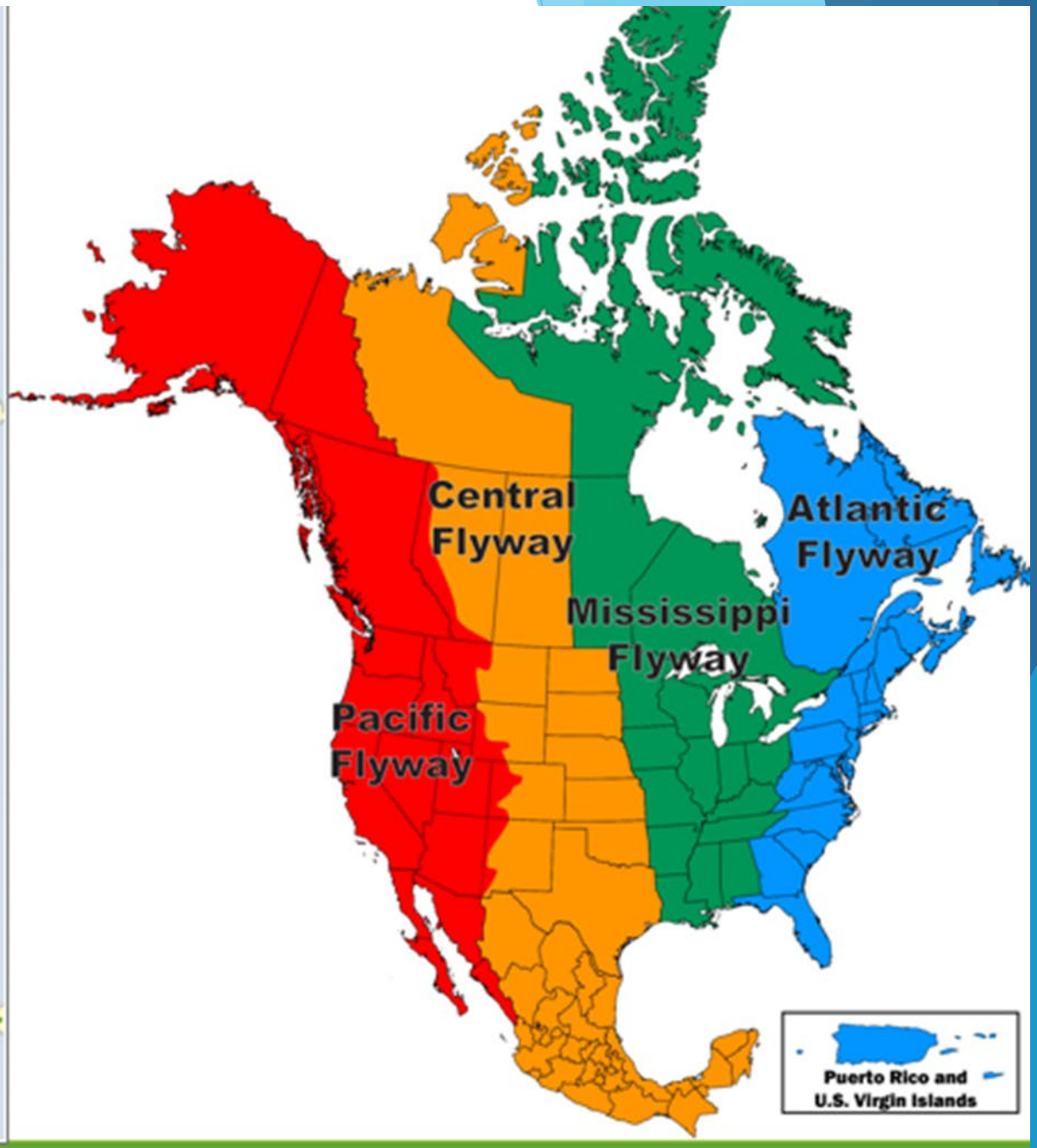
November 20, 2025

Avian Influenza-Brief Overview

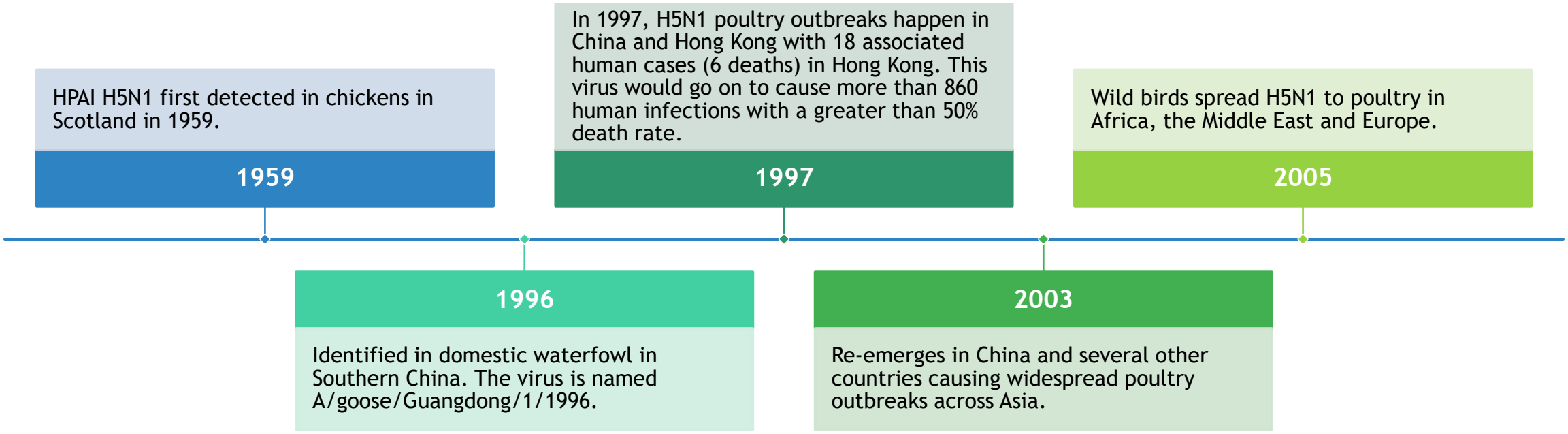
Defend the Flock | Signs of Illness {photo gallery}

- Agent: Influenza virus A, Genus *Influenzavirus A*, Family Orthomyxoviridae
  - Classified on basis of the surface glycoproteins.
    - 16 different hemagglutinin (HA or H) antigens
    - 9 different neuraminidase (NA or N) antigens
  - Low path and high path strains
  - Zoonotic potential (current US outbreak not high risk)
- Species: Many domestic and wild avian species;
  - Wild birds, especially waterfowl, can be reservoir
- Clinical signs in poultry: depression, ruffled feathers, soft-shelled eggs, sudden drop in egg production, decreased appetite, swollen wattles and combs, sudden death or high mortality
- Transmission: Direct contact, fomites, wildlife, aerosol
- Incubation: 3-14 days
- Differential diagnosis: Virulent Newcastle Disease, Avian metapneumovirus, infectious bronchitis, mycoplasma, chlamydia, other acute bacterial diseases

Avian Influenza | Animal and Plant Health Inspection Service



https://www.fws.gov/media/migratory-bird-flyways-north-america
https://www.fws.gov/media/migratorybirdprogramadministrativeflywaysstateandprovincemapjpg

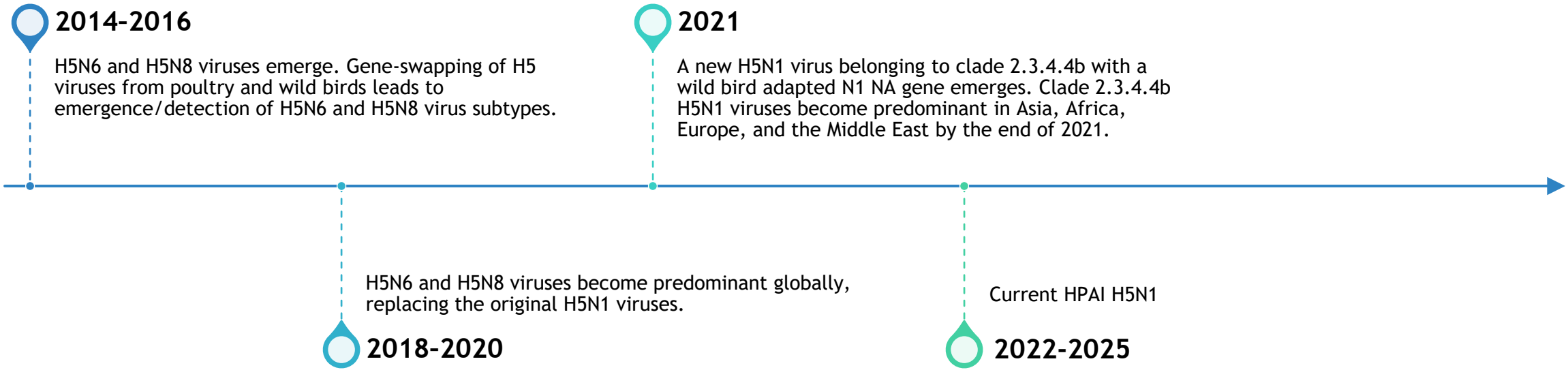


HPAI H5N1Historical Timeline

https://archive.cdc.gov/www_cdc_gov/flu/avianflu/communication-resources/bird-flu-origin-infographic.html#:~:text=2003-2005%20H5N1%20Spreads,lineages%20(genotypes)%20are%20detected

https://pmc.ncbi.nlm.nih.gov/articles/PMC12228781/#CR1

HPAI H5N1Historical Timeline



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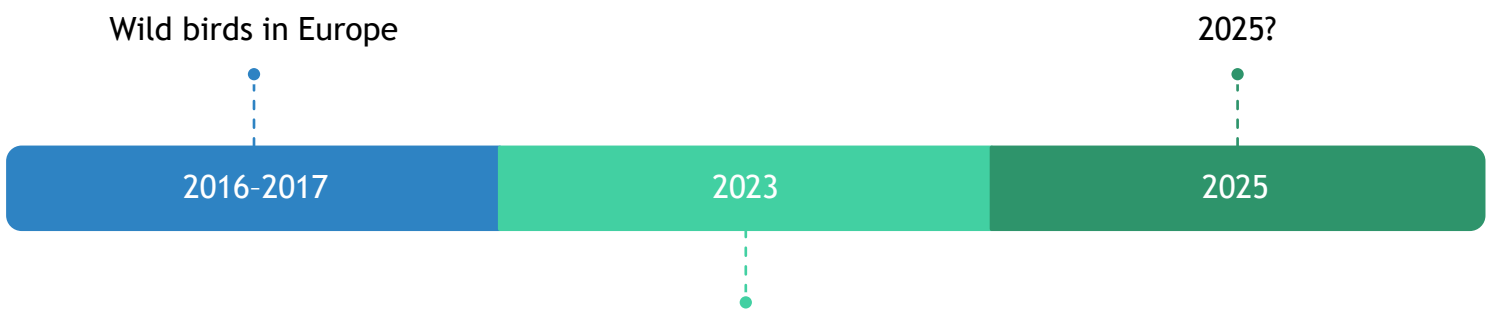
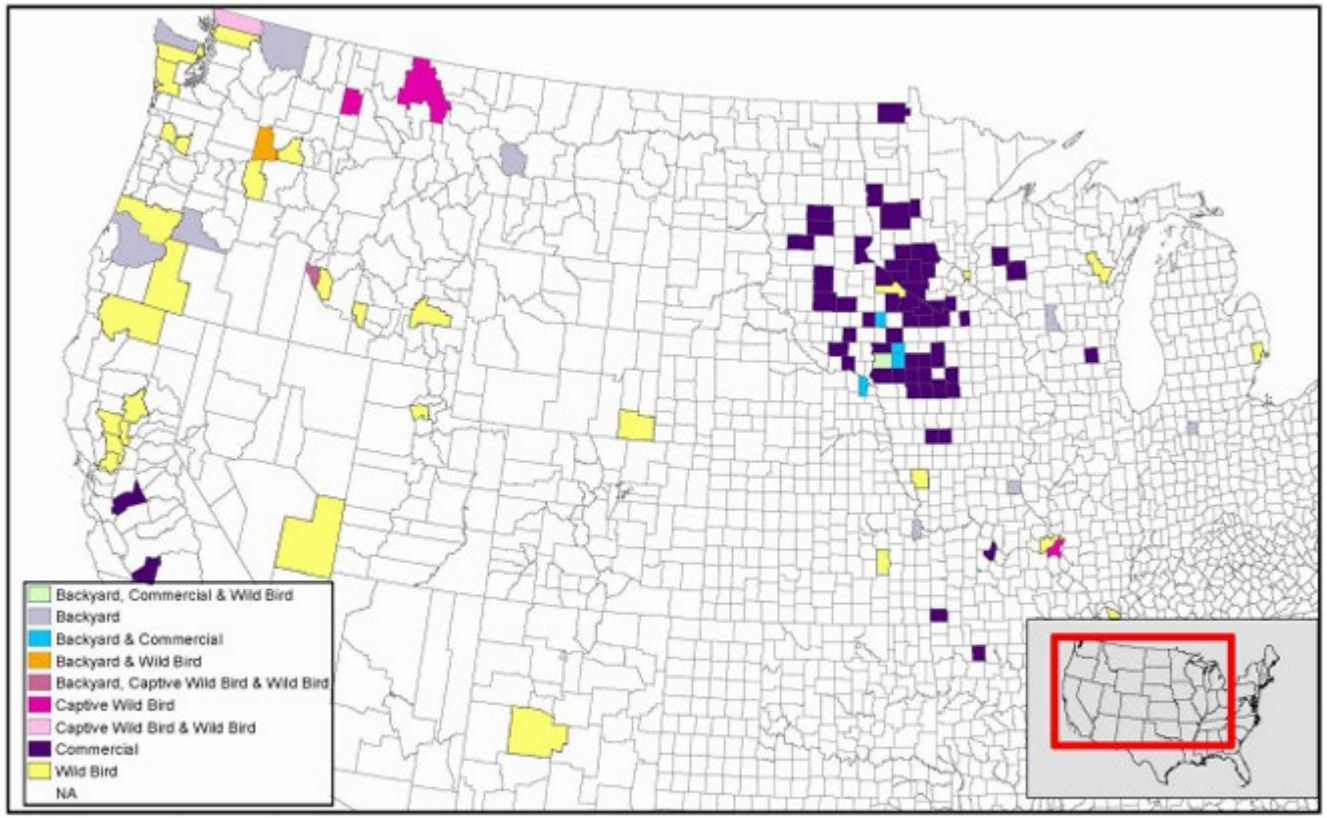
H5N5 Historically



https://pmc.ncbi.nlm.nih.gov/articles/PMC11305400/#:~:text=SUMMARY,on%20wildlife%20and%20public%20health.

https://www.cidrap.umn.edu/avian-influenza-bird-flu/canada-reports-first-h5n5-avian-flu-mammal-us-reports-more-h5n1-animals

HPAI Historical Perspective in US



Note: Map produced during the incident by USDA APHIS VS Center for Epidemiology and Animal Health, showing all detections December 2014 to June 2015.

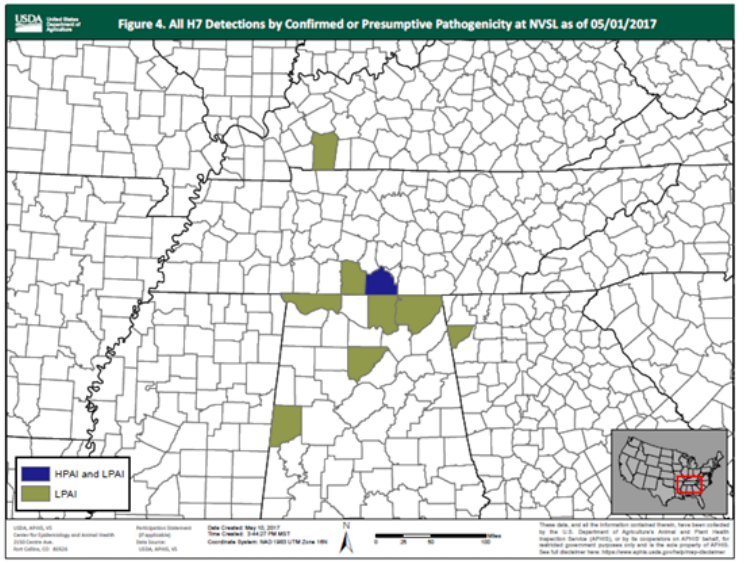
- 2014-2015 Outbreak H5N2 & H5N8
- 21 States
- 211 Commercial Poultry Detections
- 21 Backyard Poultry Detections
- Approximately 7.4 million turkeys and 43 million egg-layers/pullet chickens
- At the time this outbreak was the largest HPAI outbreak ever recorded in the United States and arguably the most significant animal health event in U.S. history.
- Impact to the U.S. economy is thought to be close to $3.3 billion

HPAI 2014-2015 USDA Final Report

HPAI Historical Perspective in US

- 2016 Outbreak H7N8 -1 State-IN 1 County 1 Premise
- 2017 Outbreak
- 4 states-AL, GA, KY, TN
- 14 affected premises
- Nearly 253,000 birds were depopulated as part of the HPAI and LPAI detections,or had succumbed to the HPAI virus.
- USDA obligated $2.79 million to pay for indemnity and response activities.

Affected Counties in the 2017 H7 Outbreak



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

[HPAI 2017 Final Report https://www.aphis.usda.gov/sites/default/files/finaloutbreakreport_shortppt.pdf]

HPAI H5N1 2022-2025- Commercial and Backyard Flocks

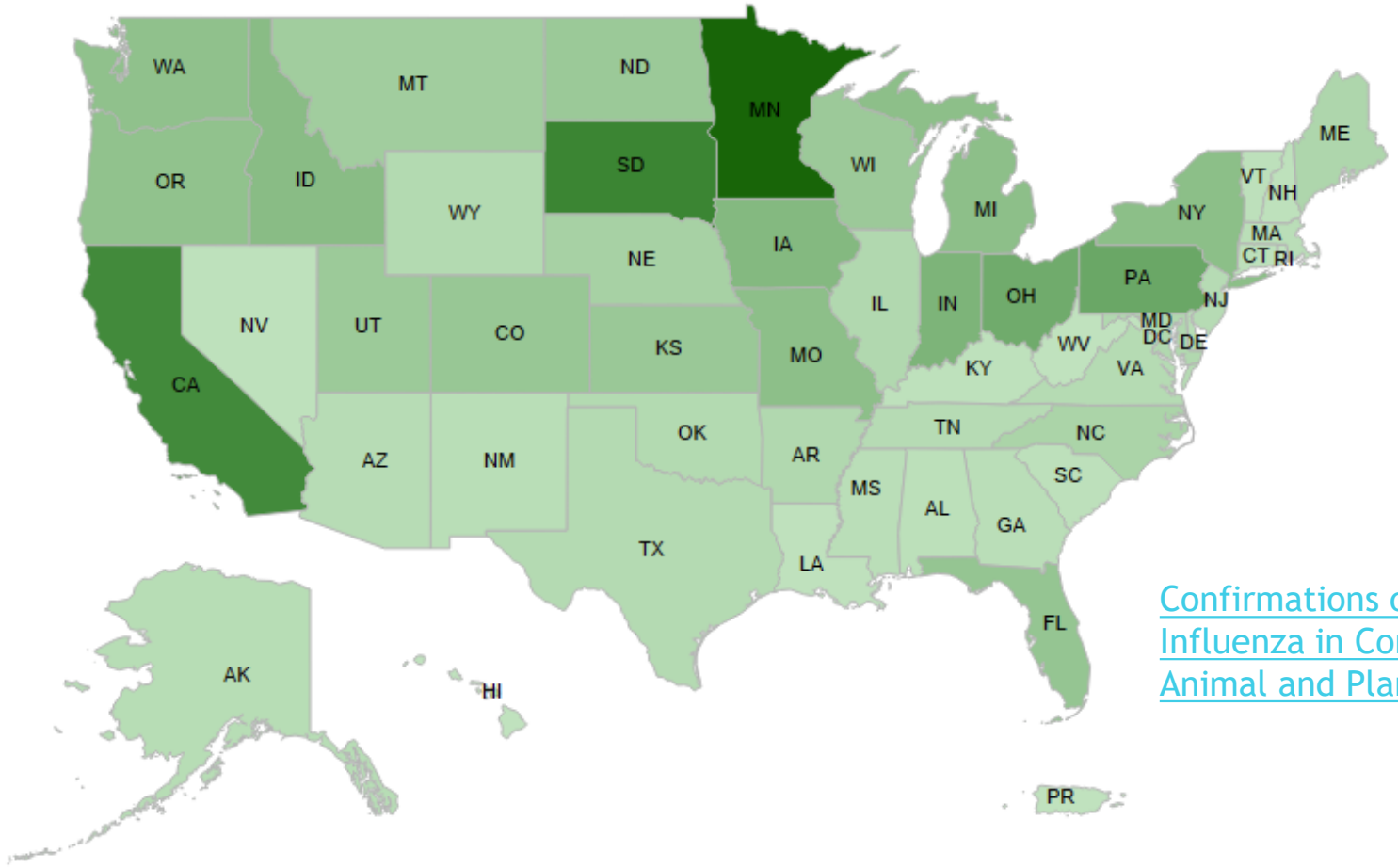
Choose variable: All Flocks

Choose time period: Total Outbreak

All Flocks by State

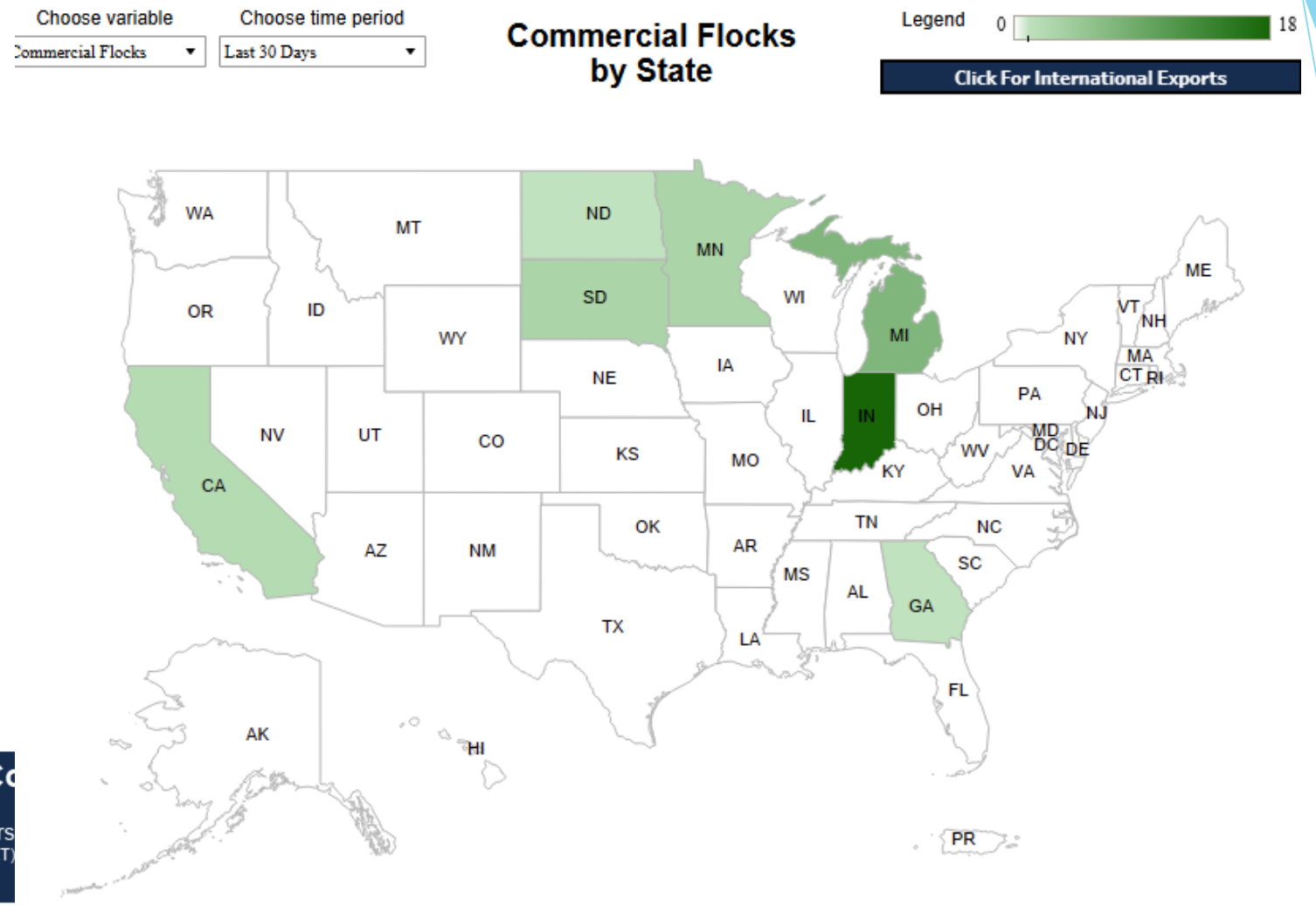
Legend 0 210

Click For International Exports



[Confirmations of Highly Pathogenic Avian Influenza in Commercial and Backyard Flocks | Animal and Plant Health Inspection Service]

Since the start of the outbreak February 8, 2022, 183.38 million birds have been affected. HPAI has been detected in a total of 1,852 flocks in 50 states and 1 territory. Of those, 865 flocks have been commercial, and 987 flocks have been backyard.



USDA

HPAI 2022/2023 Co

as of November 17, 2025

Last reported detection Thurs

Data updated weekdays by 12 PM (ET)

Outbreak Situation Last 30 Days

72 Confirmed Flocks

Flocks tested and confirmed having HPAI

Commercial Flocks	Backyard Flocks	Birds Affected*
35	**37**	**1.67M**

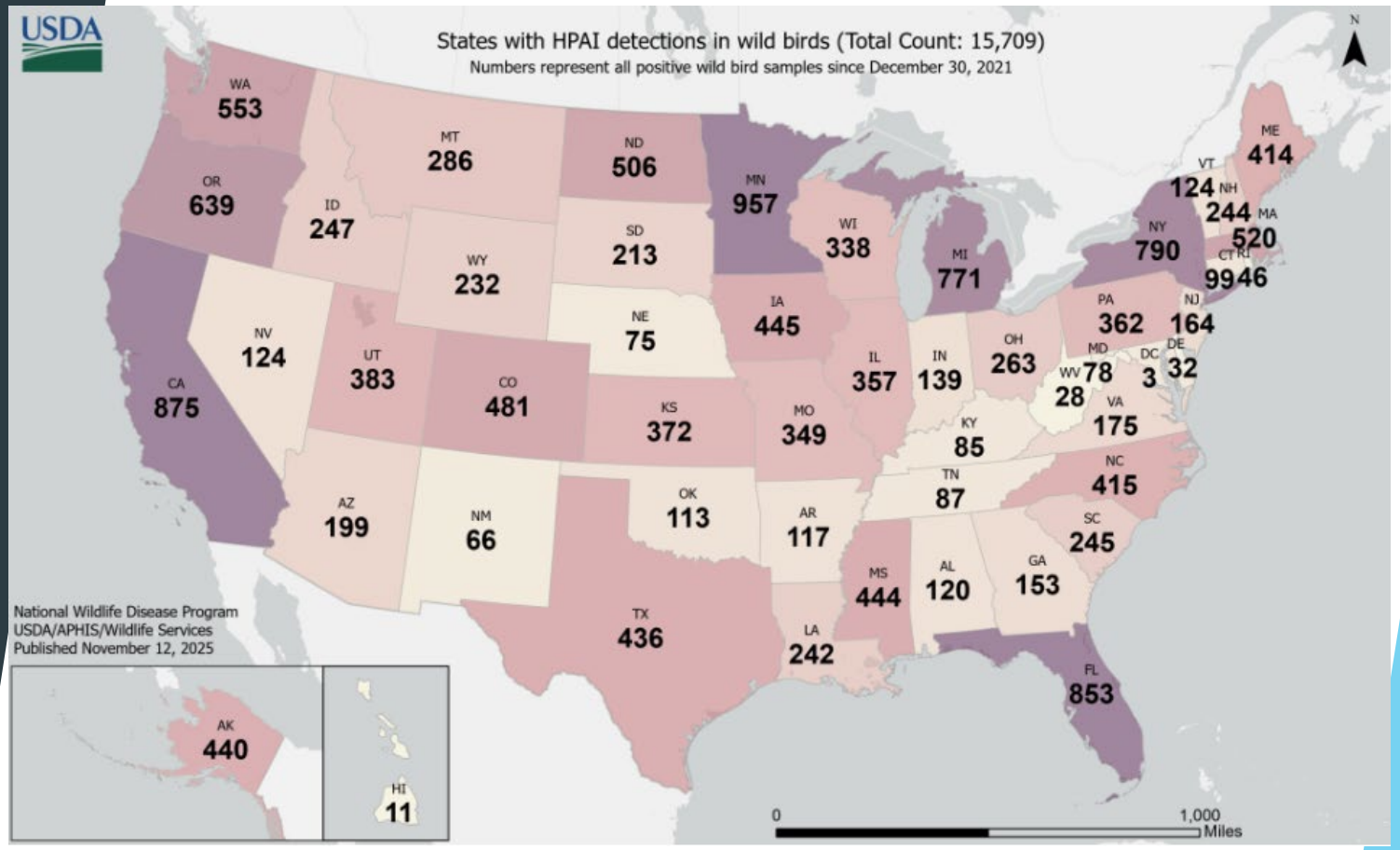
*Number of birds on confirmed infected premise

[Confirmations of Highly Pathogenic Avian Influenza in Commercial and Backyard Flocks | Animal and Plant Health Inspection Service]

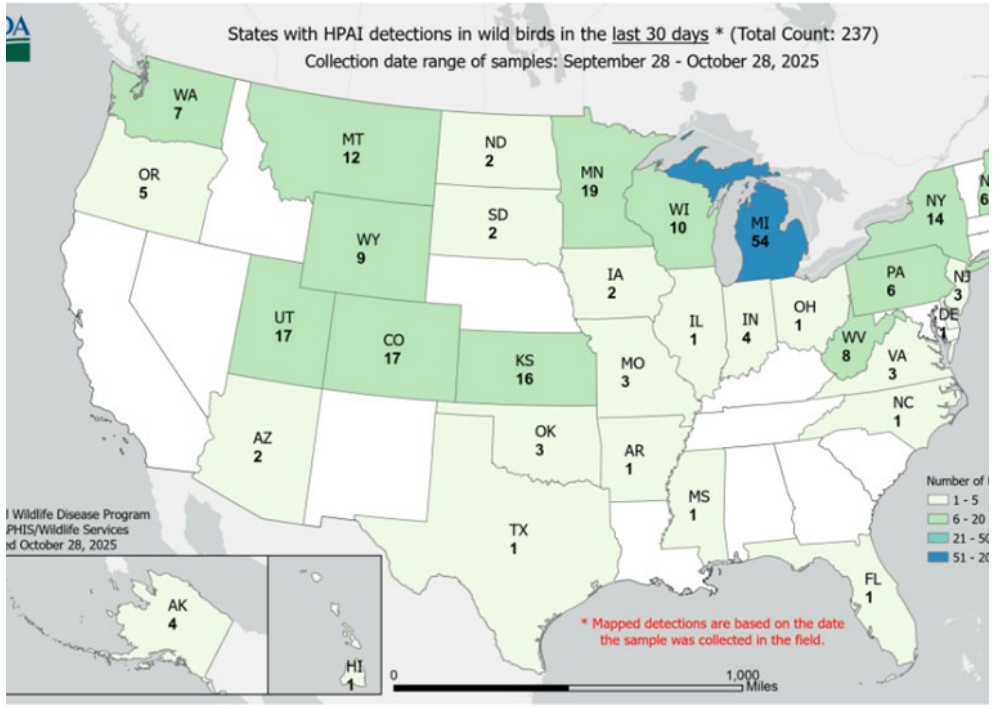
H5N1 Wild Bird Detections

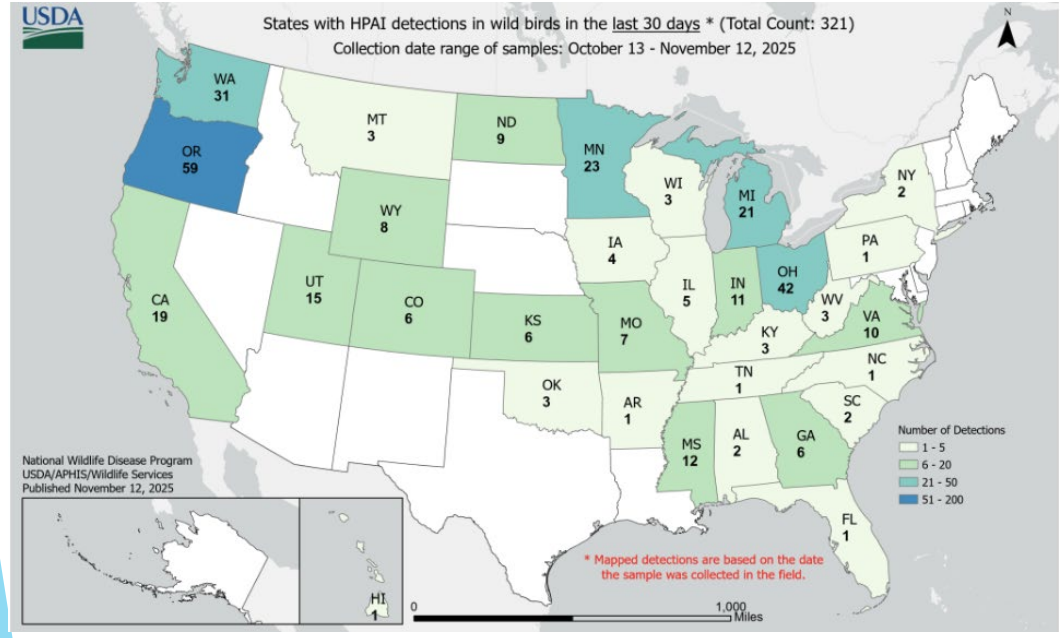
Wild Birds

- Surveillance of dabbling ducks AND morbidity/mortality investigations
- Up until this outbreak – there weren't significant wildlife mortality or morbidity – this outbreak has been very different
  - Huge mortality events; across more species than ever seen
  - 15,000+ detections



[HPAI Detections in Wild Birds]



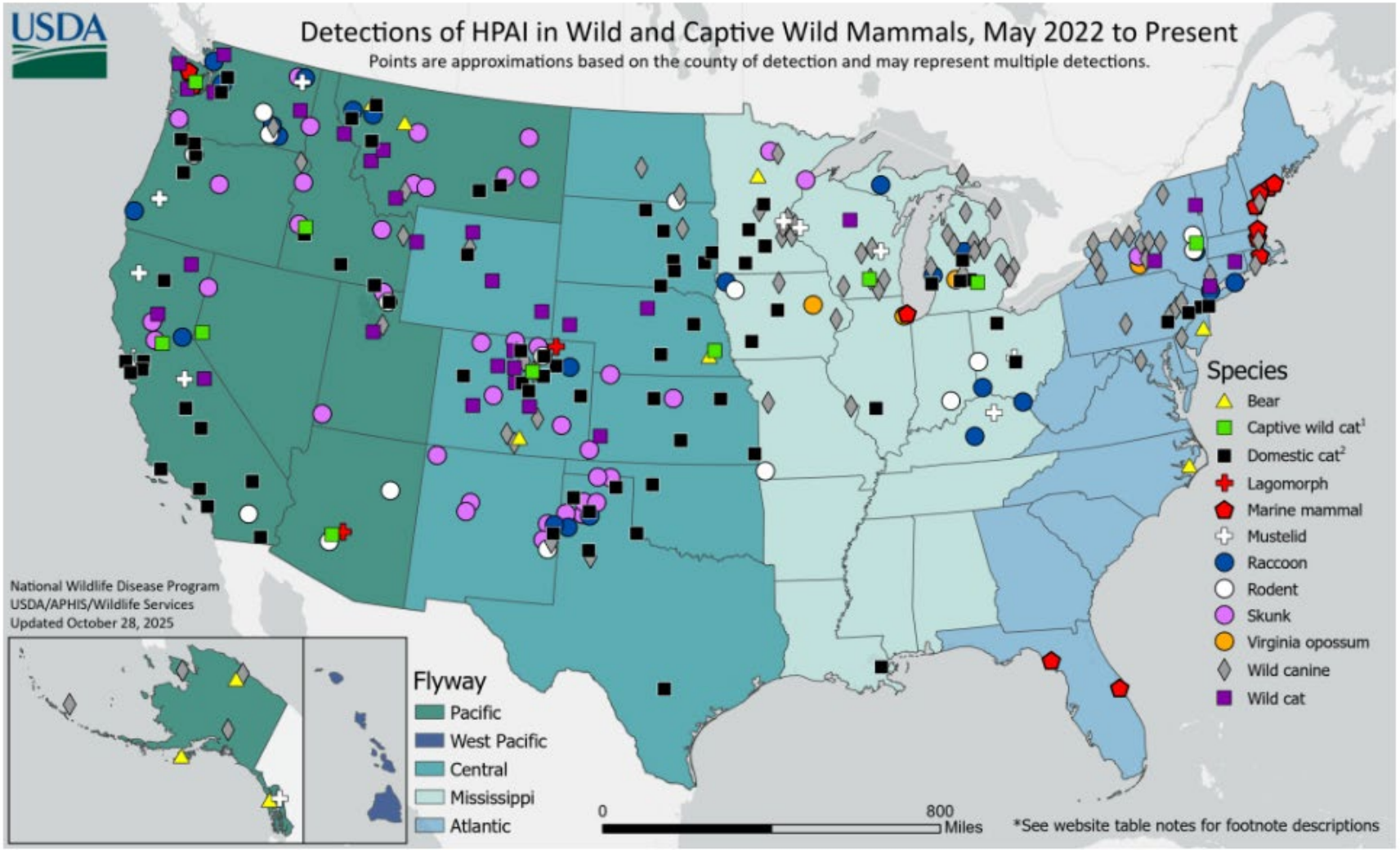


State	County	Collection	Date Detected	Bird Species
West Virginia	Monroe	10/17/2025	10/31/2025	Black vulture
West Virginia	Monroe	10/17/2025	10/31/2025	Black vulture
West Virginia	Nicholas	10/20/2025	10/31/2025	Black vulture
West Virginia	Jefferson	10/1/2025	10/15/2025	Black vulture
West Virginia	Raleigh	10/1/2025	10/15/2025	Black vulture
West Virginia	Raleigh	10/1/2025	10/15/2025	Black vulture
West Virginia	Raleigh	10/1/2025	10/15/2025	Black vulture
West Virginia	Jefferson	10/6/2025	10/15/2025	Black vulture
West Virginia	Jefferson	10/6/2025	10/15/2025	Black vulture
West Virginia	Jefferson	10/6/2025	10/15/2025	Black vulture
West Virginia	Jefferson	10/6/2025	10/15/2025	Black vulture
West Virginia	Greenbrier	9/26/2025	10/10/2025	Black vulture
West Virginia	Greenbrier	9/26/2025	10/10/2025	Black vulture
West Virginia	Greenbrier	9/26/2025	10/10/2025	Black vulture

HPAI Detections in Wild Birds

West Virginia	Ohio	2/27/2025	7/3/2025	Red-tailed hawk
West Virginia	Mercer	2/7/2025	7/1/2025	Canada goose
West Virginia	Monongalia	2/25/2025	3/6/2025	Canada goose
West Virginia	Monongalia	2/25/2025	3/6/2025	Canada goose
West Virginia	Monongalia	2/25/2025	3/6/2025	Canada goose
West Virginia	Monongalia	2/18/2025	2/27/2025	Canada goose
West Virginia	Monongalia	2/18/2025	2/27/2025	Canada goose
West Virginia	Lewis	1/28/2025	2/14/2025	Canada goose
West Virginia	Marion	1/2/2025	1/22/2025	Canada goose
West Virginia	Marion	1/2/2025	1/22/2025	Canada goose
West Virginia	Marion	1/2/2025	1/22/2025	Canada goose
West Virginia	Jefferson	2/25/2023	1/5/2024	Bald eagle
West Virginia	Jefferson	5/3/2023	5/23/2023	Great horned owl
West Virginia	Pocahontas	12/2/2022	12/16/2022	Canada goose

H5N1 Mammal Detections



There is no national surveillance system for mammals

- Mammal sampled because of mortality/morbidity events
- Most common clinical signs were neurological abnormalities
- 48 species; 656 cases
- 146 domestic cat detections in USA

[HPAI Detections in Mammals]

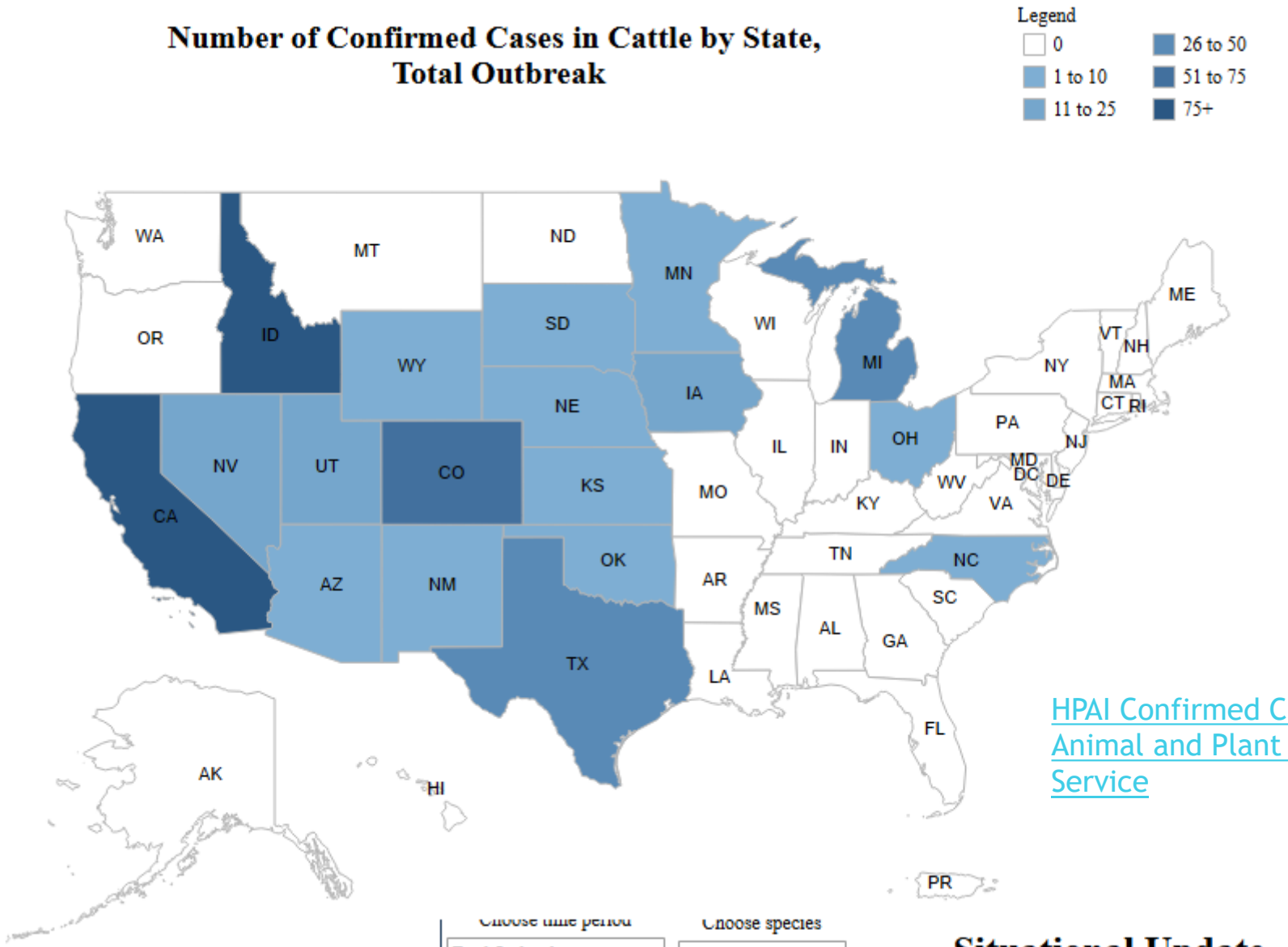
[New study describes HPAI infections in wild mammals in US | U.S. Geological Survey]

HPAI H5N1 2022-2025 Dairy Cattle

- On **March 25, 2024**, the USDA National Veterinary Services Laboratory confirmed the first detection of HPAI H5N1 clade 2.3.4.4b, genotype B3.13, in a Texas dairy herd.
- Phylogenetic analysis and epidemiology support a single introduction into this novel host followed by onward transmission.

Highly Pathogenic Avian Influenza H5N1 Genotype B3.13 in Dairy Cattle: National Epidemiologic Brief

Number of Confirmed Cases in Cattle by State, Total Outbreak



[HPAI Confirmed Cases in Livestock | Animal and Plant Health Inspection Service]

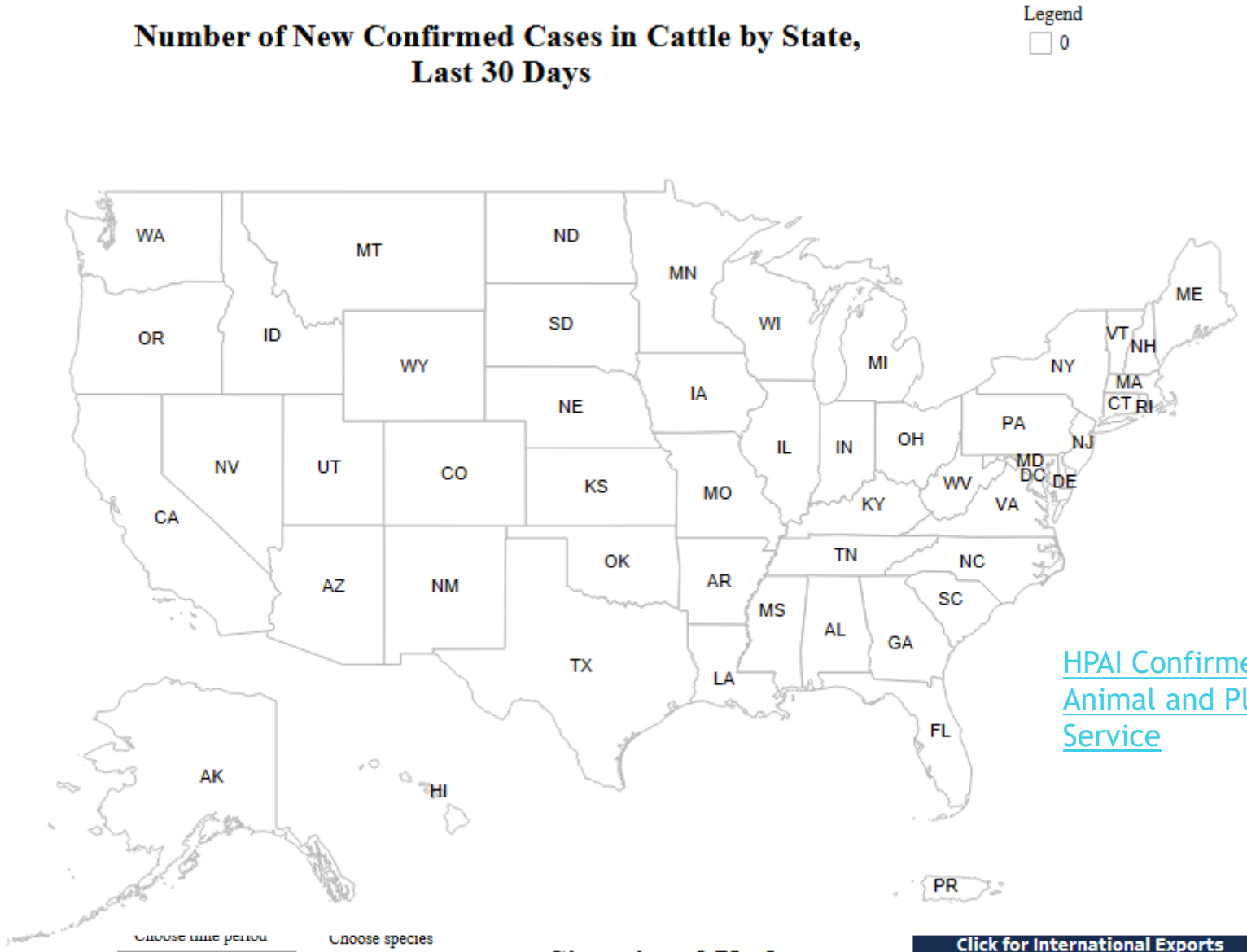
Choose time period: Total Outbreak

Choose species: Cattle

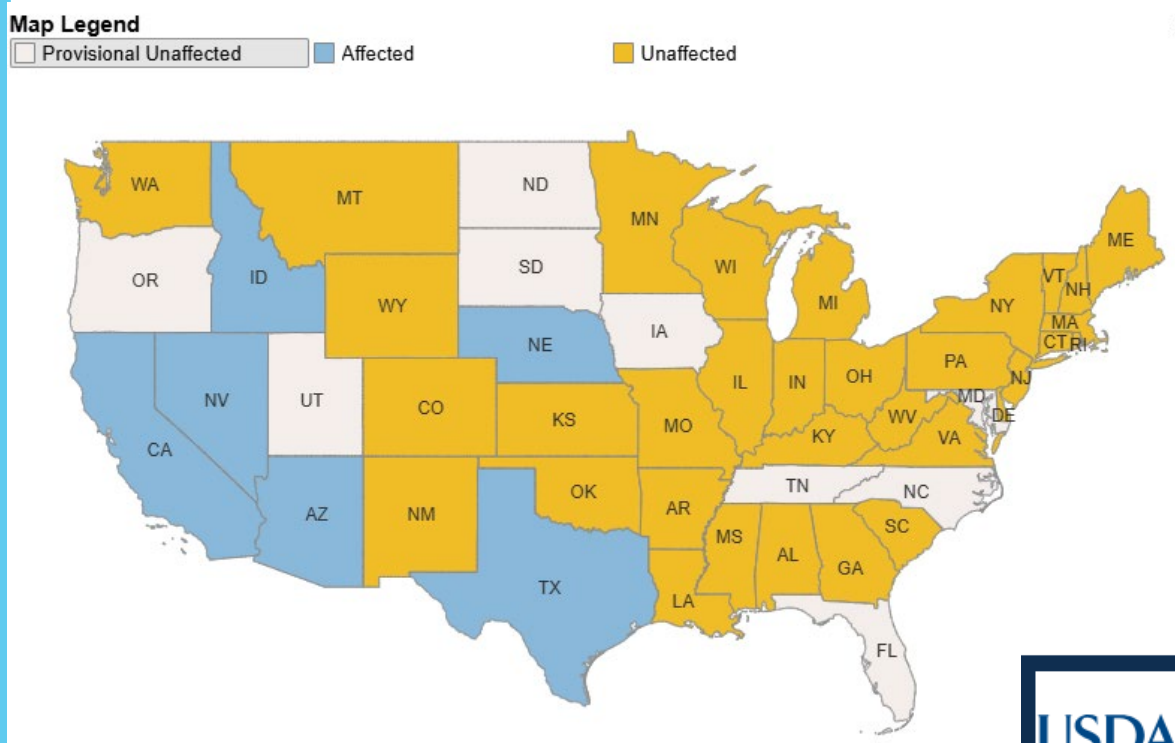
Click for International Exports

Situational Update

In the Total Outbreak, in Cattle, there were:
1,082 Confirmed Cases in **18** States



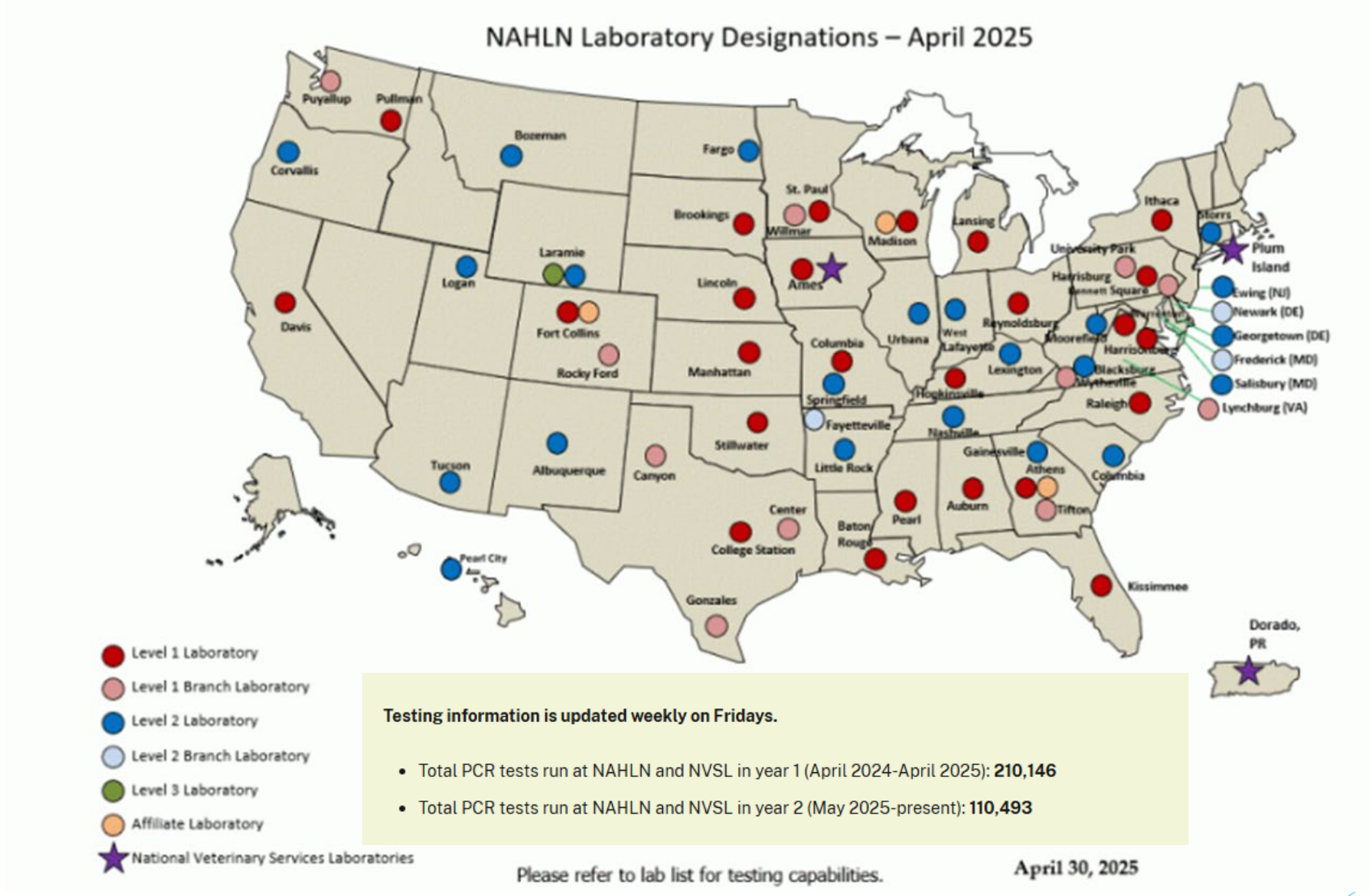
[HPAI Confirmed Cases in Livestock | Animal and Plant Health Inspection Service]



Surveillance of H5 Avian Influenza in Dairy Cattle
State Statuses based on Testing/Surveillance Activities, as part of the National Milk Testing Strategy (NMTS)
Report Date: October 30, 2025
Data updated every Friday

46 States Enrolled in the NMTS and Performing Active Surveillance	33 States are Unaffected	9 States are Provisionally Unaffected

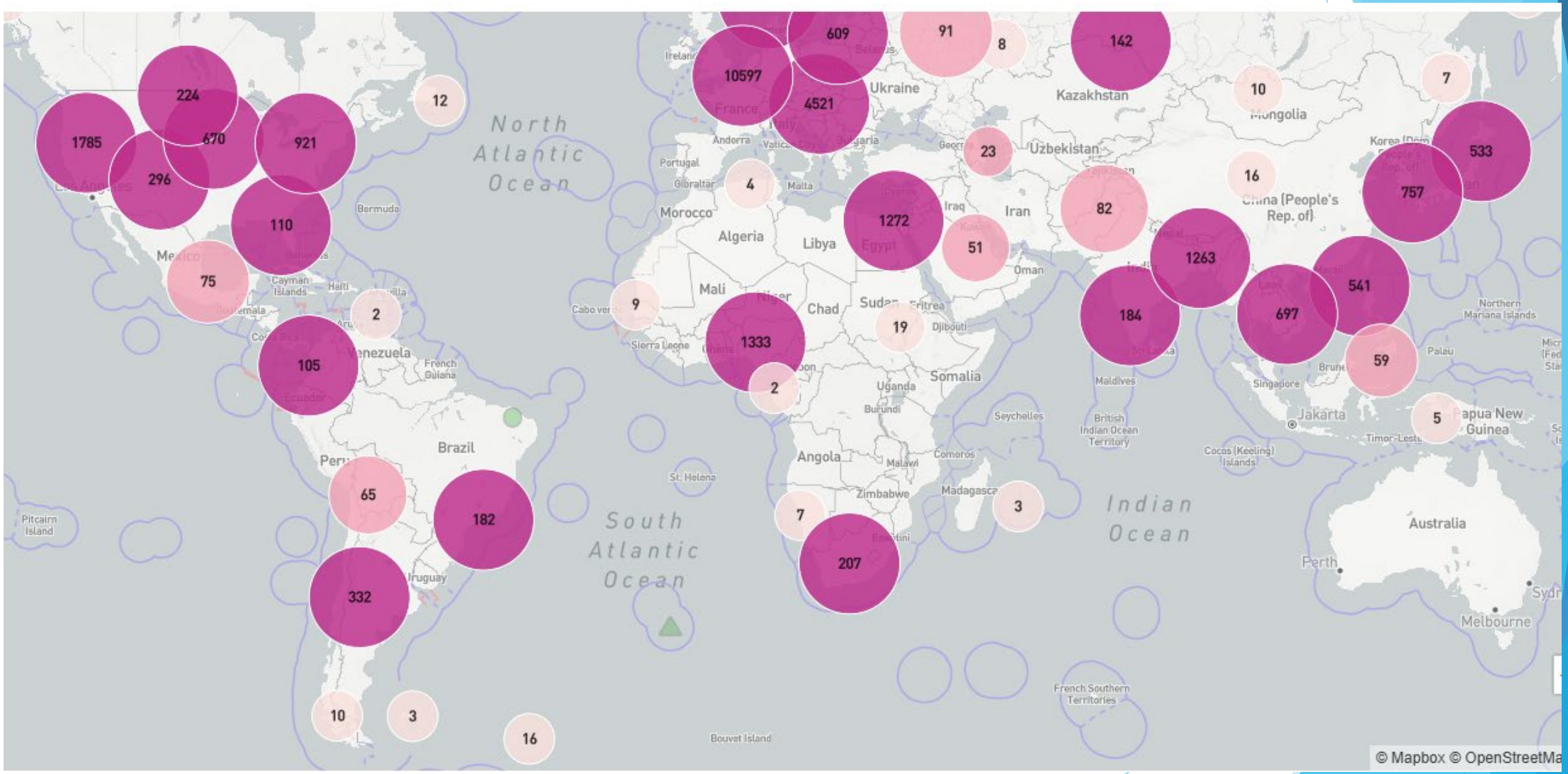
[National Milk Testing Strategy | Animal and Plant Health Inspection Service]



[NAHLN Laboratories]

[Testing | Animal and Plant Health Inspection Service]

Global HPAI Situation



(Data from WOAH/WAHIS system WAHIS (woah.org)

Economic Impact

- US taxpayers spent $1.8 billion on response activities since the beginning of the current outbreak, such as indemnity payments to compensate farmers for the value of destroyed birds.

- Between May 2024 and April 2025, Americans spent an extra $14.5 billion on eggs, bringing total expenditures to $29.9 billion—almost double the $15.3 billion average seen in non-HPAI years.

- Multiple important trading partners, such as China and Mexico, have banned exports from some U.S. states since the beginning of the 2022 outbreak, representing substantial losses of export revenues for American farmers.

https://innovateanimalag.org/hpai-costs-2025

Economic Impact

- The dairy industry has also been significantly impacted by the virus. Herds which are infected with the virus can often see a 10% to 20% decline in milk production, alongside increased medical and labor costs related to sanitation and treatment.

- The US federal government (HHS and APHIS) recently dedicated $200 million to stop the spread of H5N1 among dairy cows, hoping to prevent the sort of price spikes we've seen with eggs.

- Notably, USDA has been providing financial assistance through the Emergency Assistance for Livestock, Honeybees, and Farm-Raised Fish Program (ELAP) and as of this writing, 931 producer applications have been processed, with ~$355.8 million paid out to affected farmers.

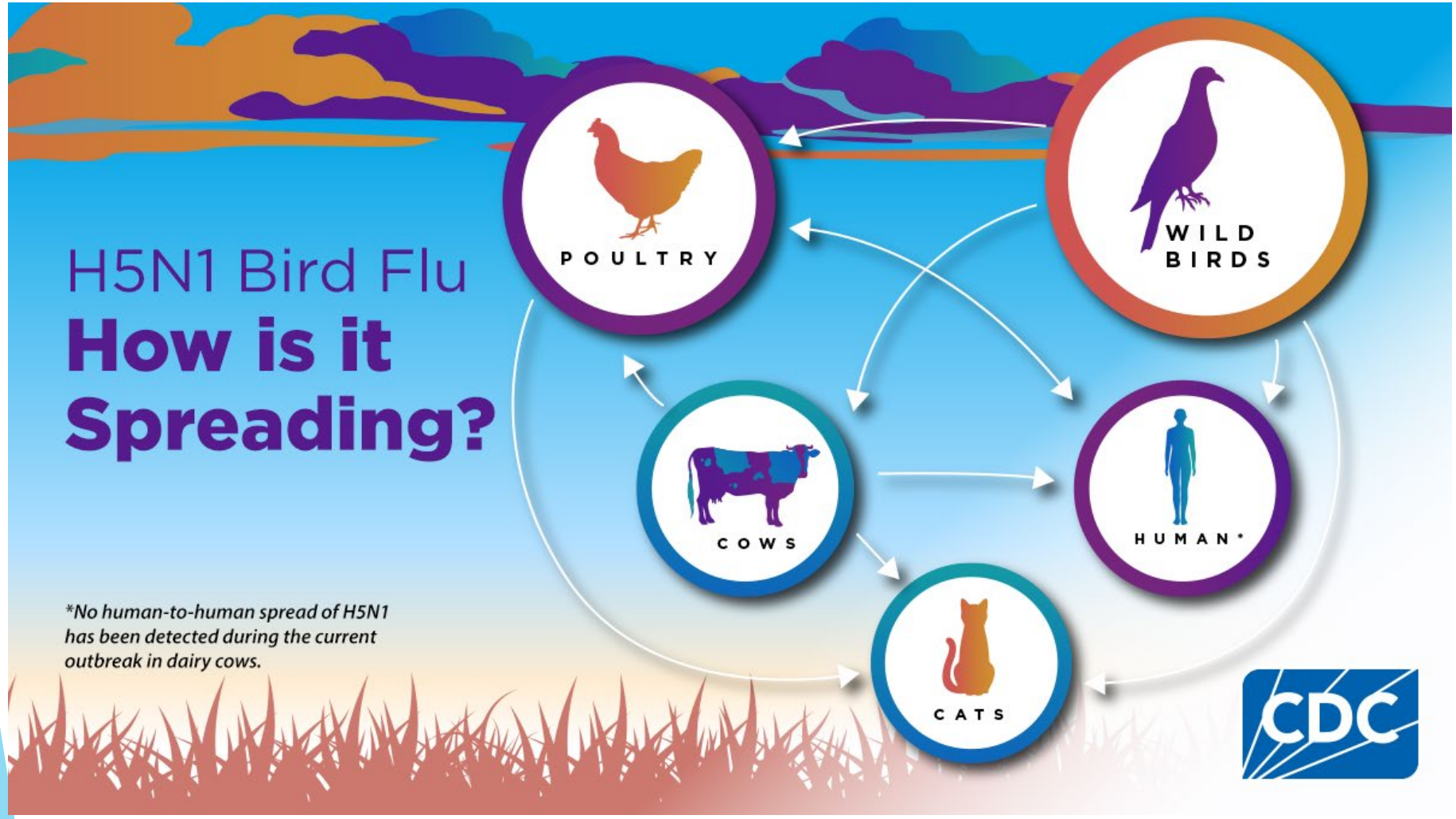
- If bird flu turns into a greater human health emergency, then the costs to society could be significantly larger.

https://innovateanimalag.org/hpai-costs-2025

Typical Case Investigation and Reporting

- Reporting of Sick birds-backyard producers, veterinarians, extension, DNR, USDA APHIS VS and WS, public health.
- Commercial Poultry Companies-ongoing routine pre-movement, pre-slaughter, NPIP surveillance. Increased mortality- samples submitted for Avian Influenza.
- Number one priority once a flock is detected as positive is to depopulate within 24-48 hours to stamp out disease.
- A control area is established with surveillance testing of all poultry flocks (likely dairies too) within the control area.
- Movements into and out of the control area must be approved and permitted. Also, an approved farm specific biosecurity plan is required.
- WVDA IMT will be activated. Unified Command will be established with USDA APHIS VS.
- Communications with USDA, DNR, DOH, local health departments, etc.
- All avian influenza results are messaged from the NAHLN lab.

One Health



While the current public health risk is low, CDC is watching the situation carefully and working with states to monitor people with animal exposures.

H5 Bird Flu: Current Situation | Bird Flu | CDC

One Health

National situation summary

Person-to-person spread

NONE

There is no known person-to-person spread at this time.

Current public health risk

LOW

The current public health risk is Low.

Cases in the U.S.

71 cases

Deaths in U.S.

1 death

[H5 Bird Flu: Current Situation | Bird Flu | CDC]

Mental Health Aspect for Producers

- A 2023 Morbidity and Mortality Weekly Report (MMWR) article, Suicide Rates by Industry and Occupation — National Vital Statistics System, United States, 2021, reports a male suicide rate of 52.1 per 100,000 among farmers and ranchers in 2021, compared to 32.0 per 100,000 among male working aged adults across all occupations.

Mental Health Aspect For Producers

- Farming is a business largely influenced by factors that are beyond farmers' control.
  - Weather, disease, pests, prices, and interest rates, and which can come and go without warning.
- Farmers can be isolated, geographically and socially, since they often work alone.
- They are self-reliant, independent and can be unlikely to ask for help.
- Many come from a tradition of not sharing their challenges, choosing instead to tough them out on their own
- They work long hard days, and many deprioritize their own health and well being to get the job done.
- Stress as a concept may often be seen by farmers as something the urban office dwellers experience
- Farming is unique, and many clinicians don't "get it" Farmers cannot be advised to take a vacation or search for a less stressful job. Farmers feel a tremendous weight at the possible loss their land, the possibility they could be the one to lose something that has been in their family for generations. Their role as a farmer is at the root of their identity; it's their culture, not just a job.

https://www.farmaid.org/blog/fact-sheet/why-farmers-face-unique-threats-from-stress/

Thank You!

Erika Alt, DVM
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West Virginia Department of Agriculture