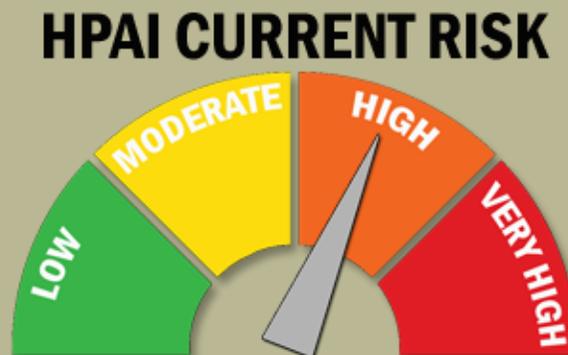


MeCHAP Veterinary CE Webinar 5/25/22

Announcements



- Highly Pathogenic Avian Influenza (HPAI) is in Maine
 - Keep your birds inside (and tell your clients) away from wild waterfowl
 - Report sick birds! **1-866-536-7593**
 - This number is managed by USDA and information will be routed to Maine Animal Health staff



- Have Maine clients? **Want FREE RFID tags (cattle only)?**
 - Call Donna Flint, DACF ADT Tech, **207-557-4623**

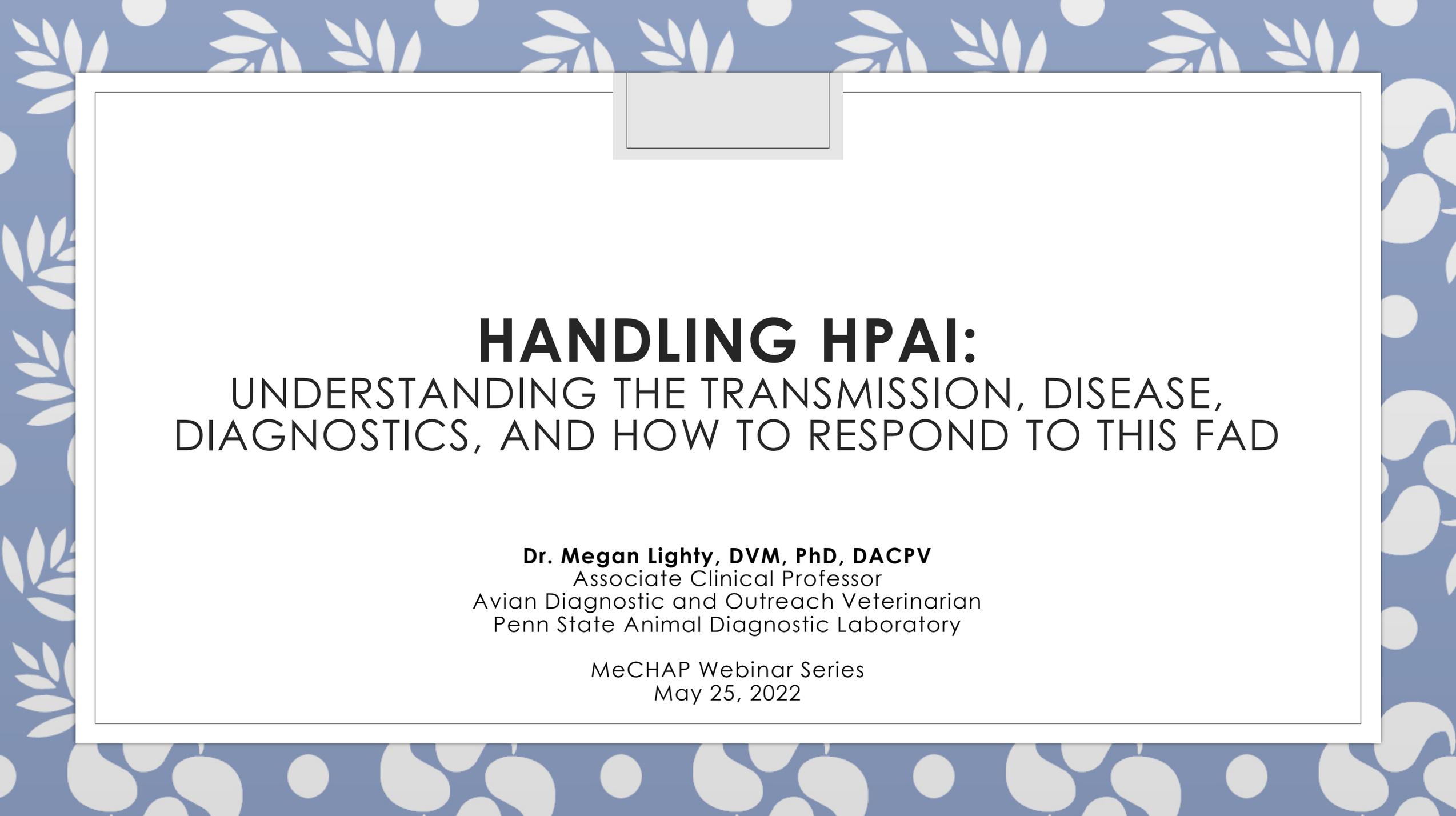
Welcome to today's MeCHAP Webinar:



“Handling HPAI: Understanding the transmission, disease, diagnostics, and how to respond to this FAD”

Dr. Megan E. F. Lighty, DVM, PhD, DACPV

Associate Clinical Professor, Avian Diagnostic and Outreach Veterinarian,
The Pennsylvania State University, Animal Diagnostic Laboratory



HANDLING HPAI:

UNDERSTANDING THE TRANSMISSION, DISEASE, DIAGNOSTICS, AND HOW TO RESPOND TO THIS FAD

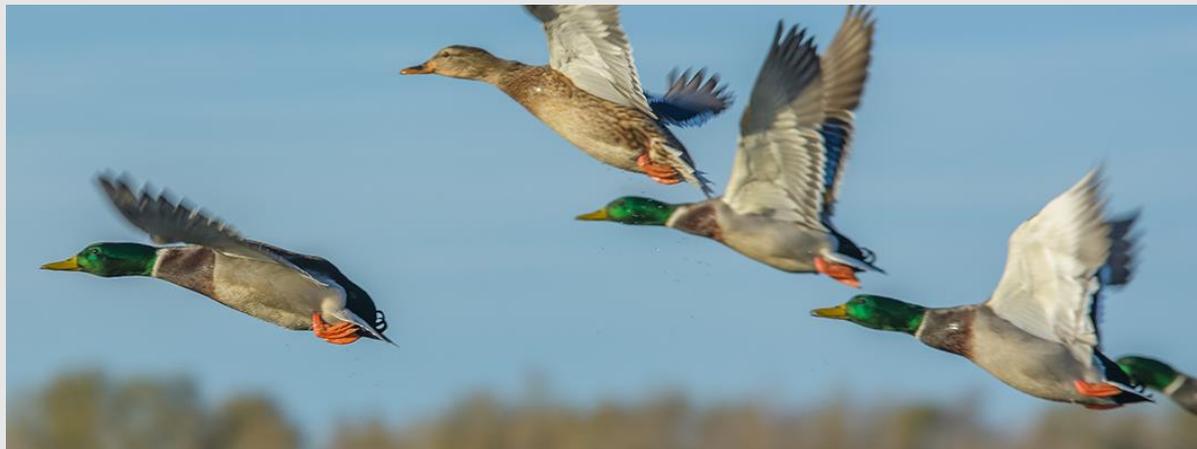
Dr. Megan Lighty, DVM, PhD, DACPV

Associate Clinical Professor
Avian Diagnostic and Outreach Veterinarian
Penn State Animal Diagnostic Laboratory

MeCHAP Webinar Series
May 25, 2022

Avian Influenza

- Avian Influenza: Influenza type A viruses
- Wild waterfowl and shorebirds are the natural reservoir host
 - Infections are generally asymptomatic – do not cause any clinical signs
 - Virus shed in **feces** and other secretions
 - People, animals, clothing, footwear, vehicles, tools, equipment, feed/water can all be contaminated → vectors for disease spread

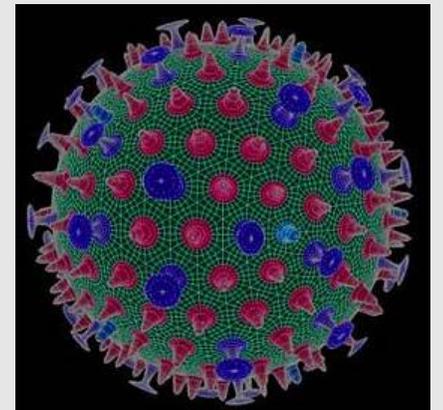


Classification of Avian Influenza Viruses

- Pathogenicity
 - LPAI = low pathogenicity avian influenza
 - Viruses that may cause no or only mild clinical signs/mortality in domestic poultry
 - These viruses are typically more common in the US
 - HPAI = highly pathogenic avian influenza
 - Viruses that can cause severe disease and significant mortality in chickens
 - Changes in the Hemagglutinin proteolytic cleavage site

Classification of Avian Influenza Viruses

- Surface proteins
 - Hemagglutinin
 - 16 known H types of avian influenza
 - H5 and H7 subtypes have the potential to be highly pathogenic
 - Neuraminidase
 - 9 known N types of avian influenza
 - Different combinations of the H and N proteins create different **subtypes**
 - Examples: H1N1, H5N8, H6N2, H7N9
- Virus lineage = location of strain origin
 - North American lineage
 - Eurasian lineage



Avian Influenza Viruses

- Detection of any H5/H7 (LPAI and HPAI) influenza virus in domestic poultry is reportable in the US
 - Any suspect case must be IMMEDIATELY reported to the State Veterinarian and/or APHIS Area Veterinarian In-Charge

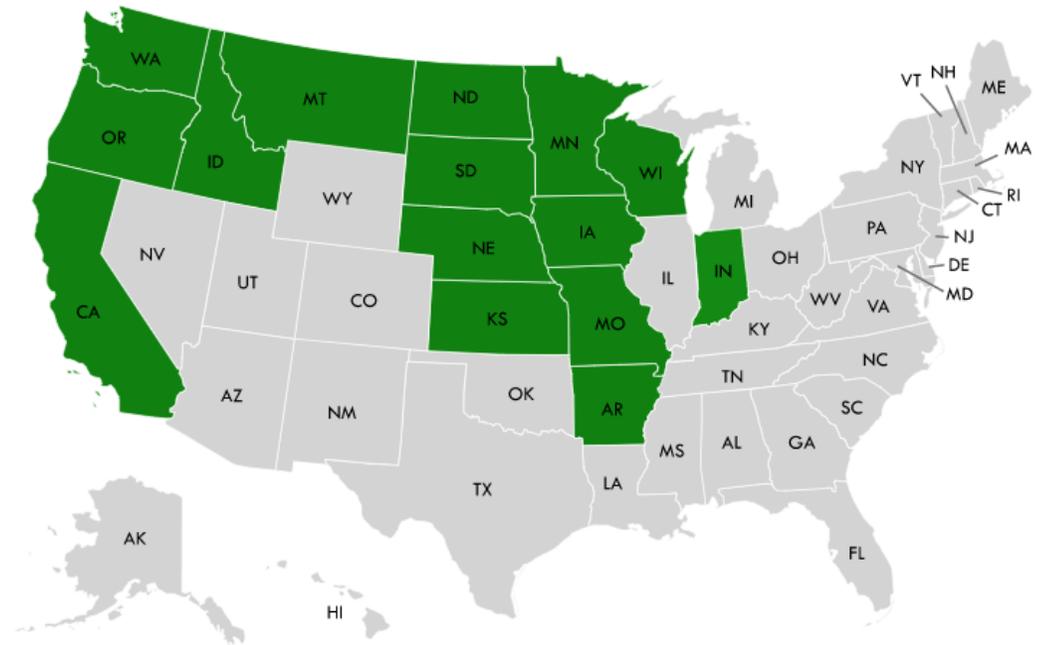
Avian Influenza Viruses

- HPAI is considered a Foreign Animal Disease (FAD) in the US
- Detections in **poultry** are internationally reportable to the OIE
 - Poultry:
 - All birds reared or kept in captivity for the production of any commercial animal products or for breeding for this purpose, fighting cocks used for any purpose, and all birds used for restocking supplies of game or for breeding for this purpose, until they are released from captivity.
 - Non-Poultry:
 - Birds that are kept in a single household, the products of which are used within the same household exclusively, are NOT considered poultry, provided that they have no direct or indirect contact with poultry or poultry facilities.
 - Birds that are kept in captivity for other reasons, including those that are kept for shows, racing, exhibitions, zoological collections and competitions, and for breeding or selling for these purposes, as well as pet birds, are NOT considered poultry, provided that they have no direct or indirect contact with poultry or poultry facilities.
- Backyard flocks may be classified as poultry or non-poultry depending on specific use of the birds/products

2014/2015 HPAI Outbreak in the US

- 211 commercial premises, 21 backyard/non-commercial premises
- 15 states
- Approximately 50.4 million birds affected
- H5N2 and H5N8 viruses
- Last detection reported 6/15/2015

HPAI 2014/15 Confirmed Detections

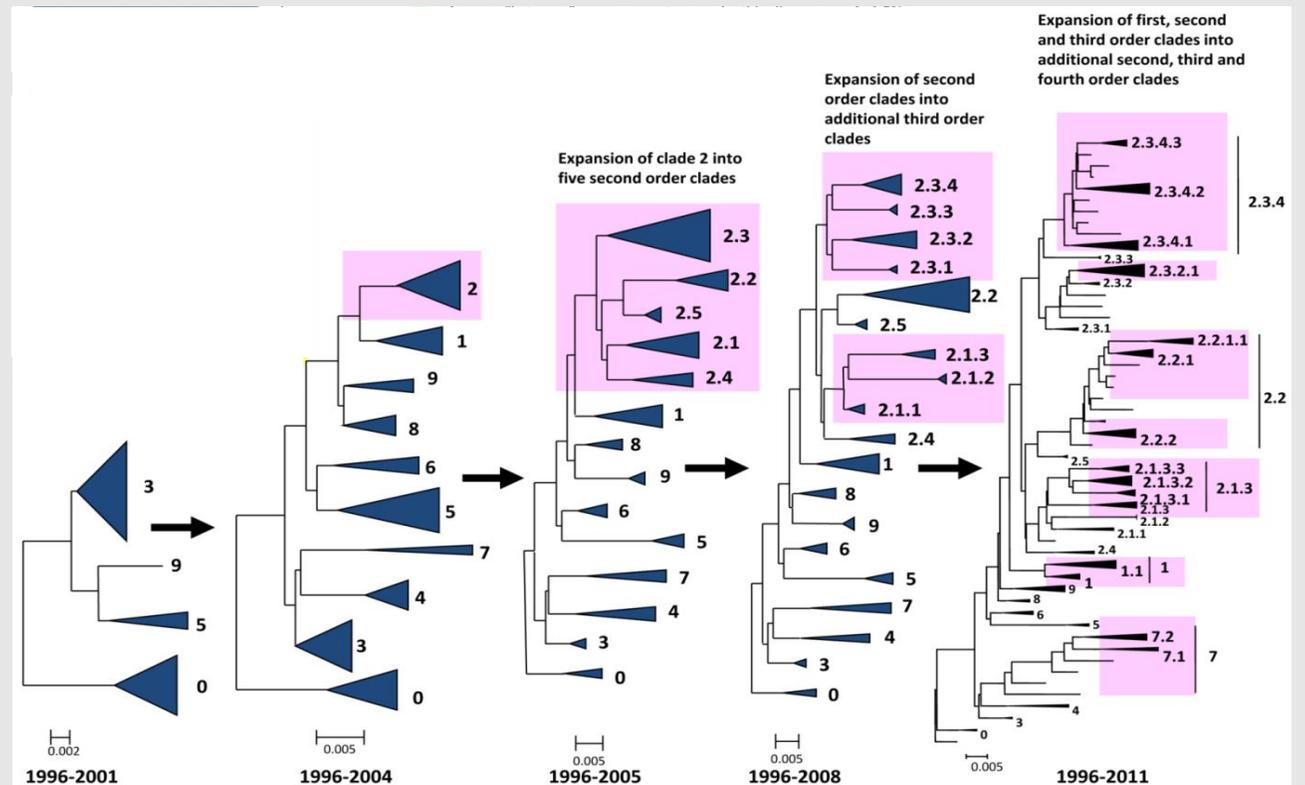


Current HPAI Situation in North America

- Eurasian-lineage H5N1 clade 2.3.4.4b
 - December 20, 2021
 - Canadian Food Inspection Agency reported detection in a multi-species exhibition flock in Newfoundland and Labrador, Canada
 - January 13, 2022
 - USDA reported detection in a wild duck in South Carolina
 - February 9, 2022
 - USDA reported detection in commercial turkey flock in Indiana

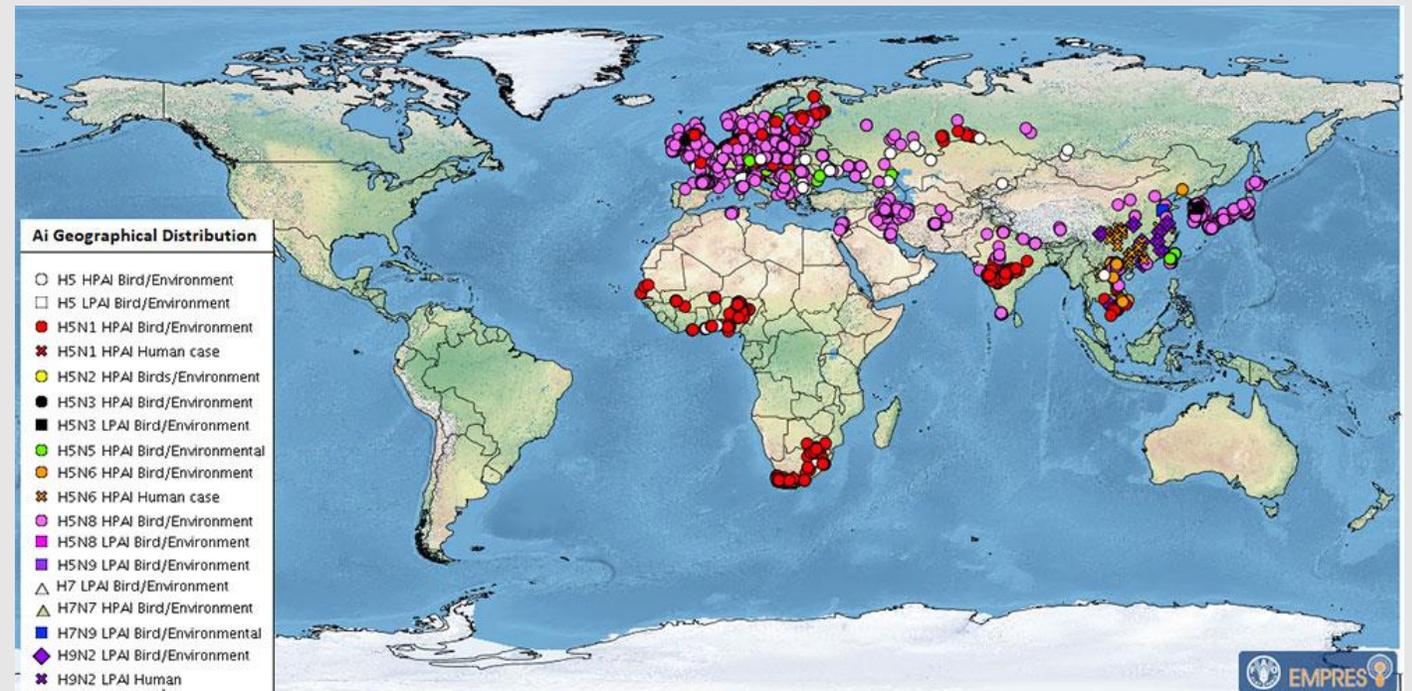
Current HPAI Situation in North America

- Eurasian H5 Goose/Guangdong-lineage HPAI virus
 - 2022 outbreak: clade 2.3.4.4b
 - 2014-15 US outbreak: clade 2.3.4.4c



Current HPAI Situation in North America

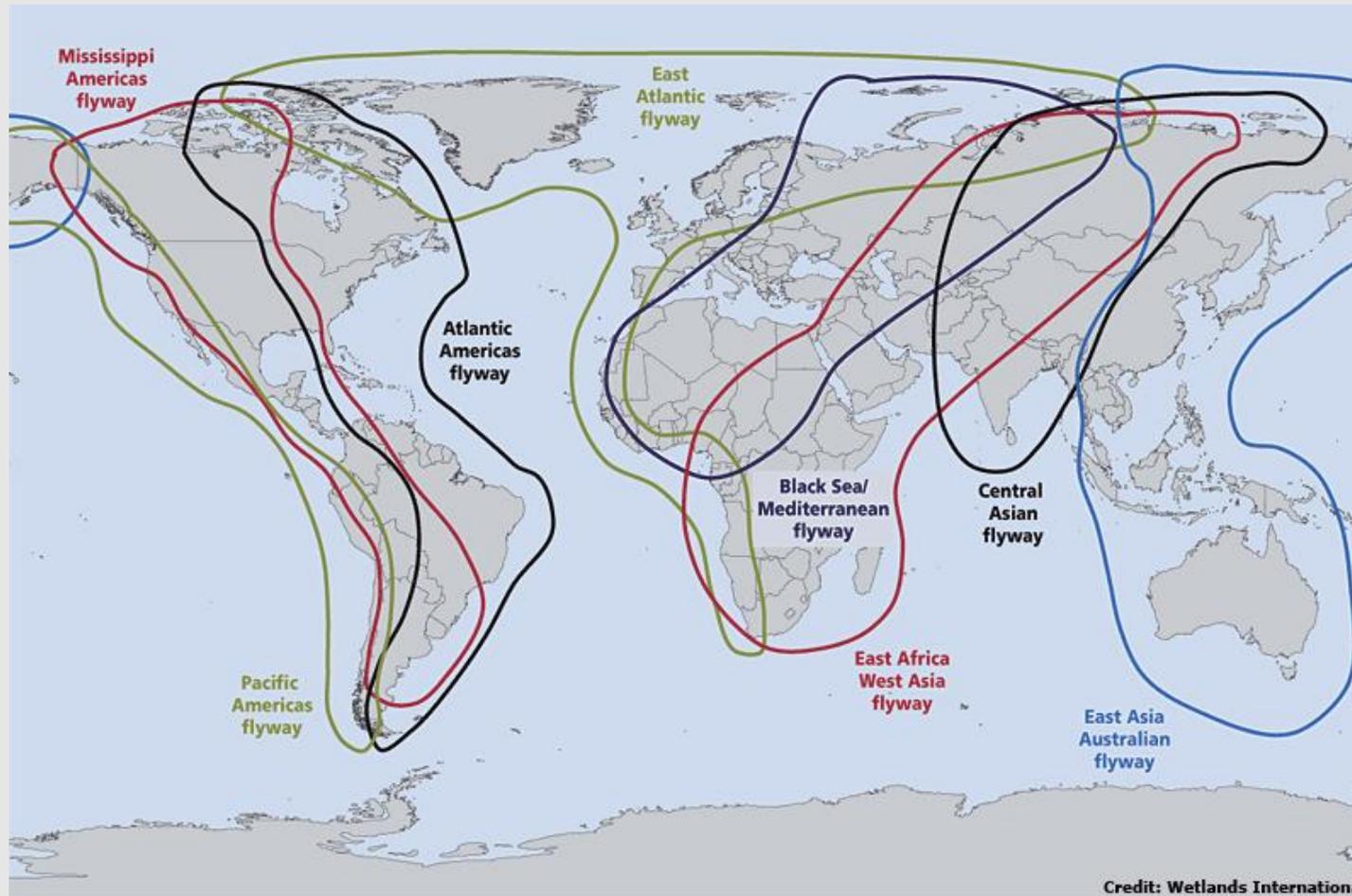
- Similar virus has been widely circulating throughout Europe, Asian, and Africa in recent years
 - Causing devastating losses for poultry owners
 - Some wild bird mortality events



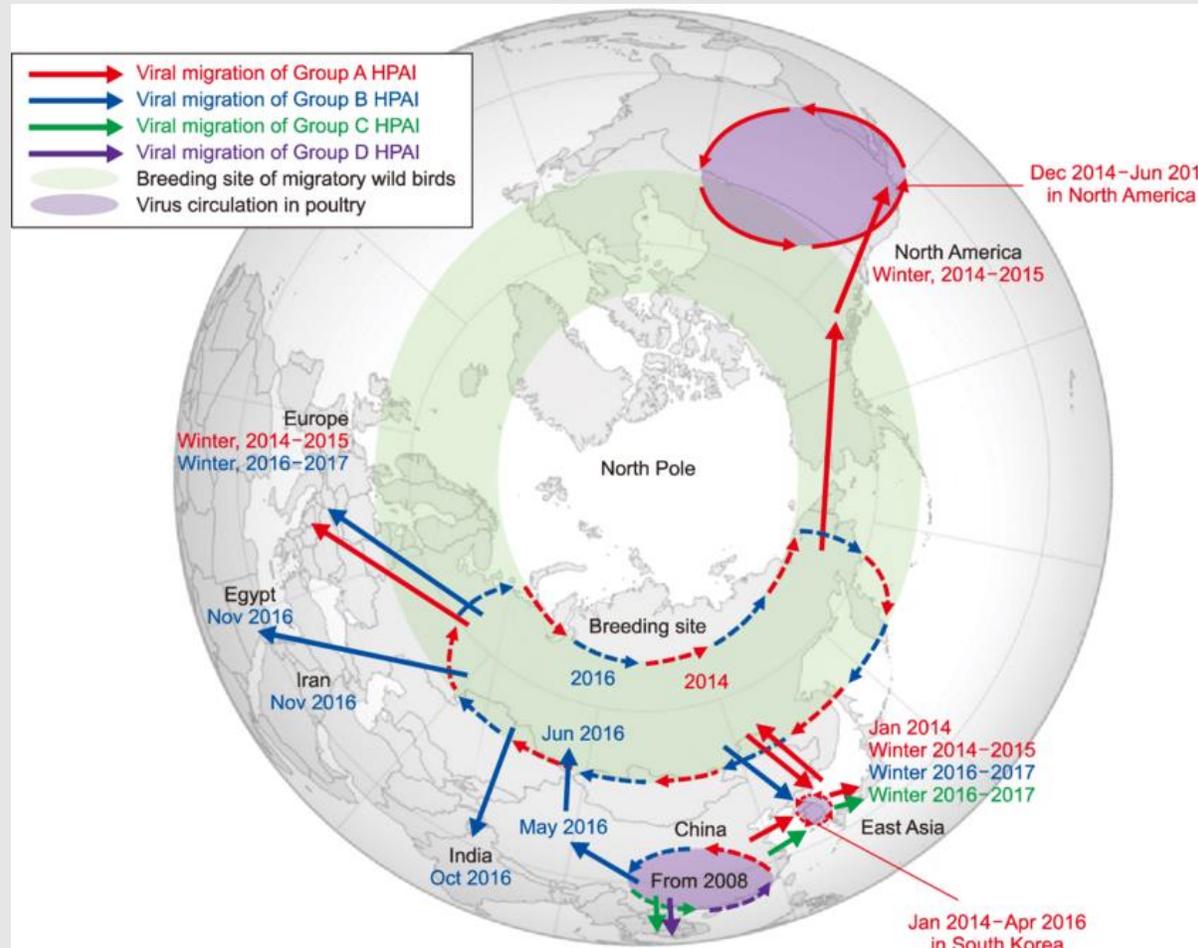
Eurasian lineage H5Nx viruses

- Unique in that they are circulating in wild birds as HPAI
 - Most AI viruses circulate in wild birds as LPAI
 - Mutation to HPAI after spill-over into domestic poultry
- Bi-directional movement between wild birds and domestic poultry
- Mortality events in wild birds

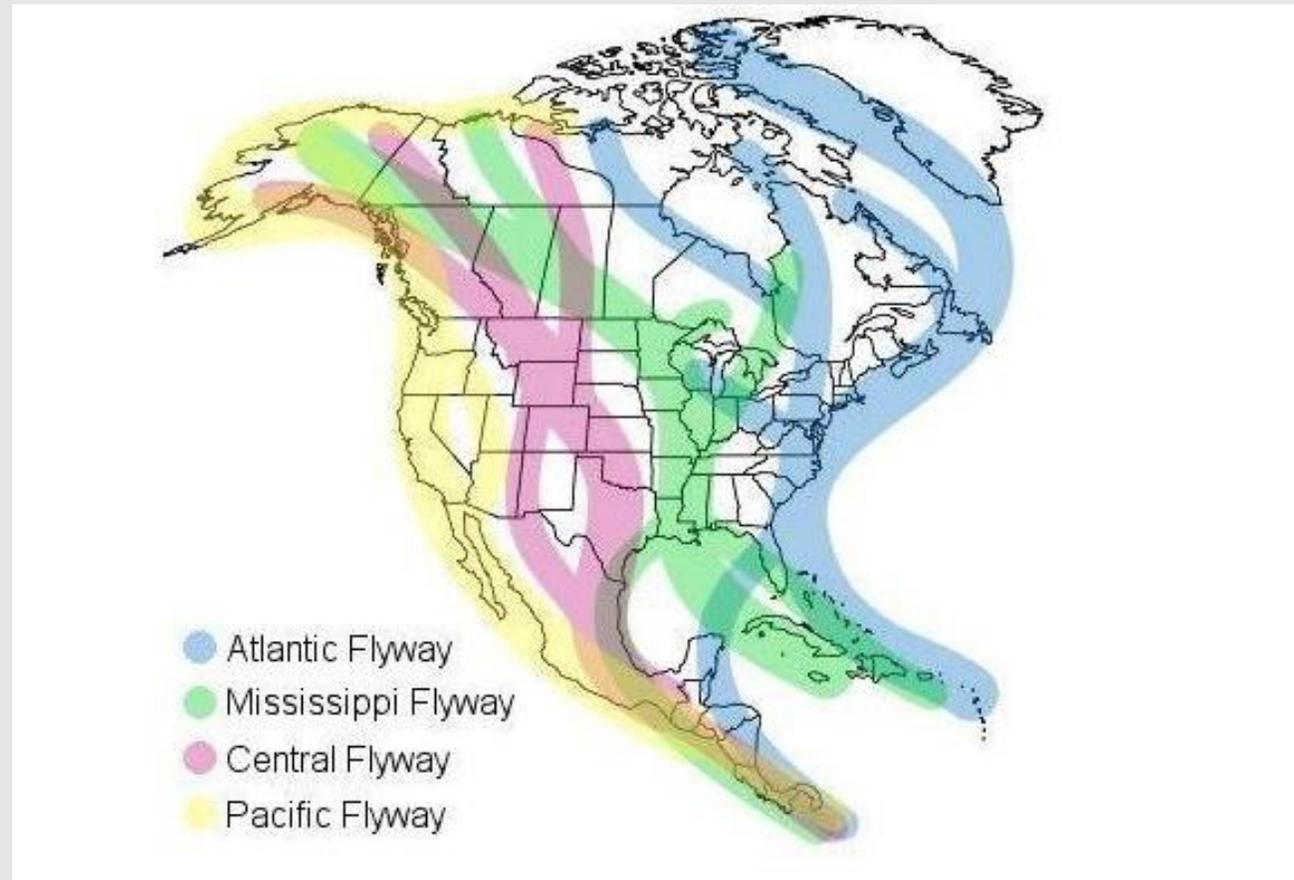
How Did this Virus Get to the US?



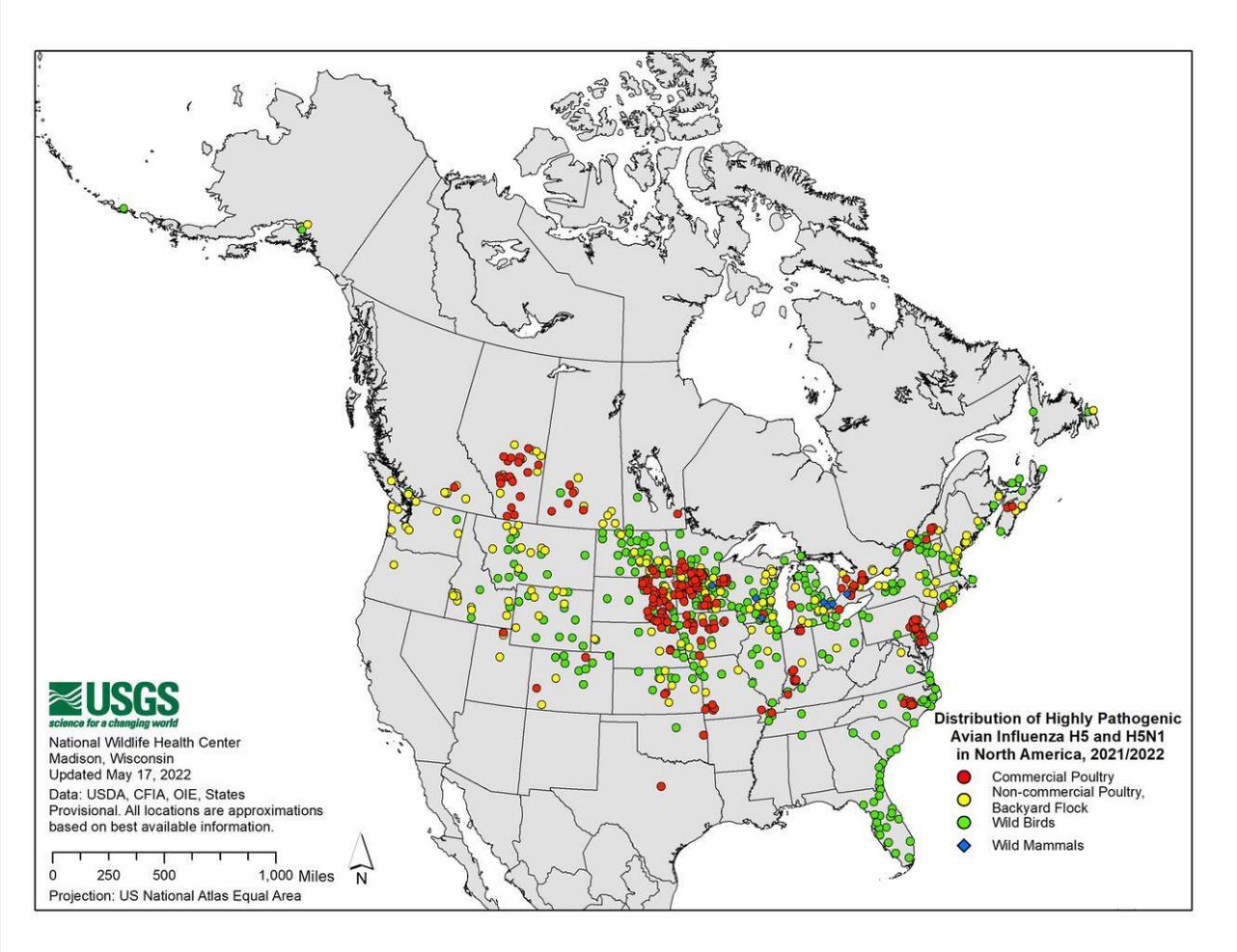
How Did this Virus Get to the US?



How Did this Virus Get to the US?

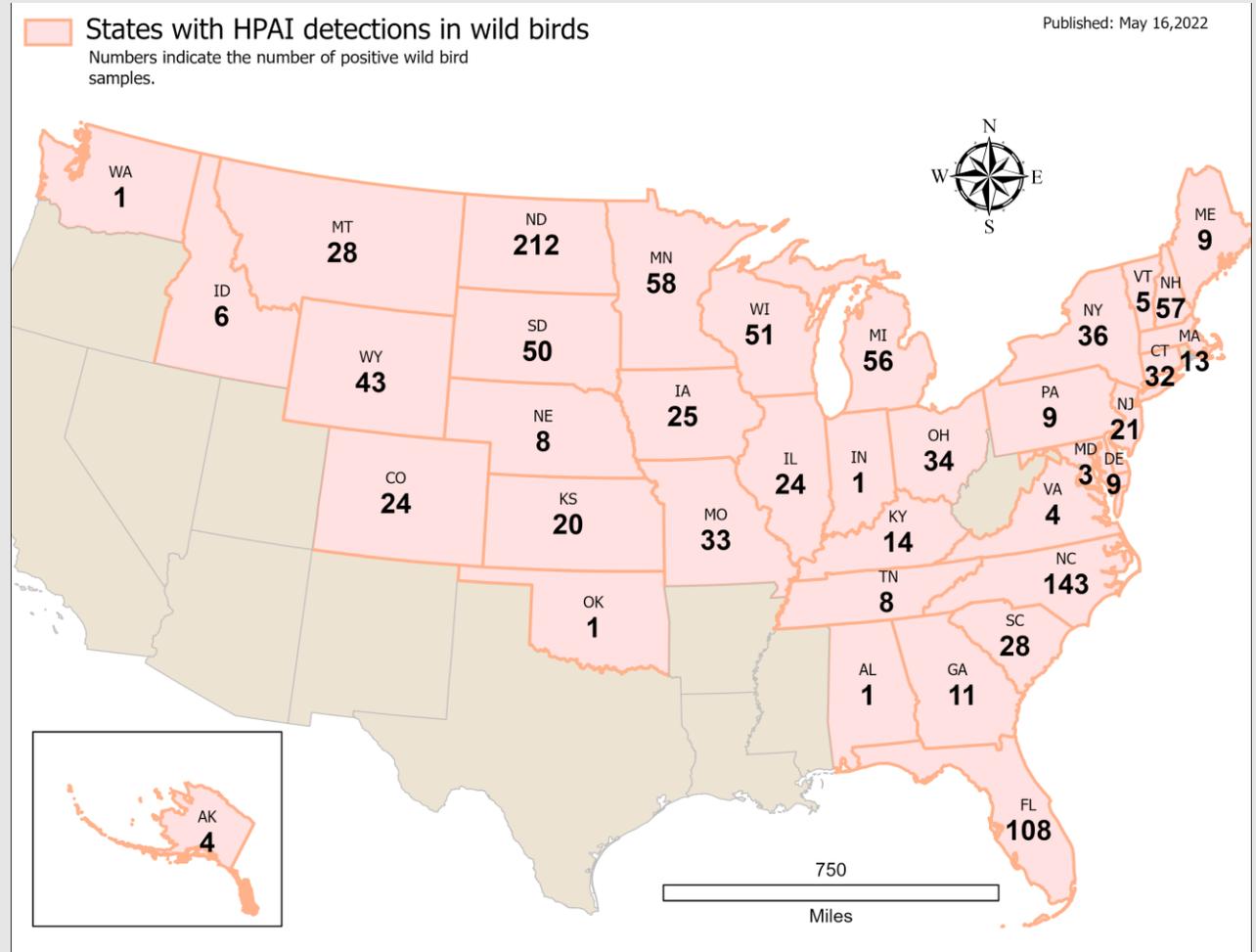


Current HPAI Detections in North America



2022 US Wild Bird Detections

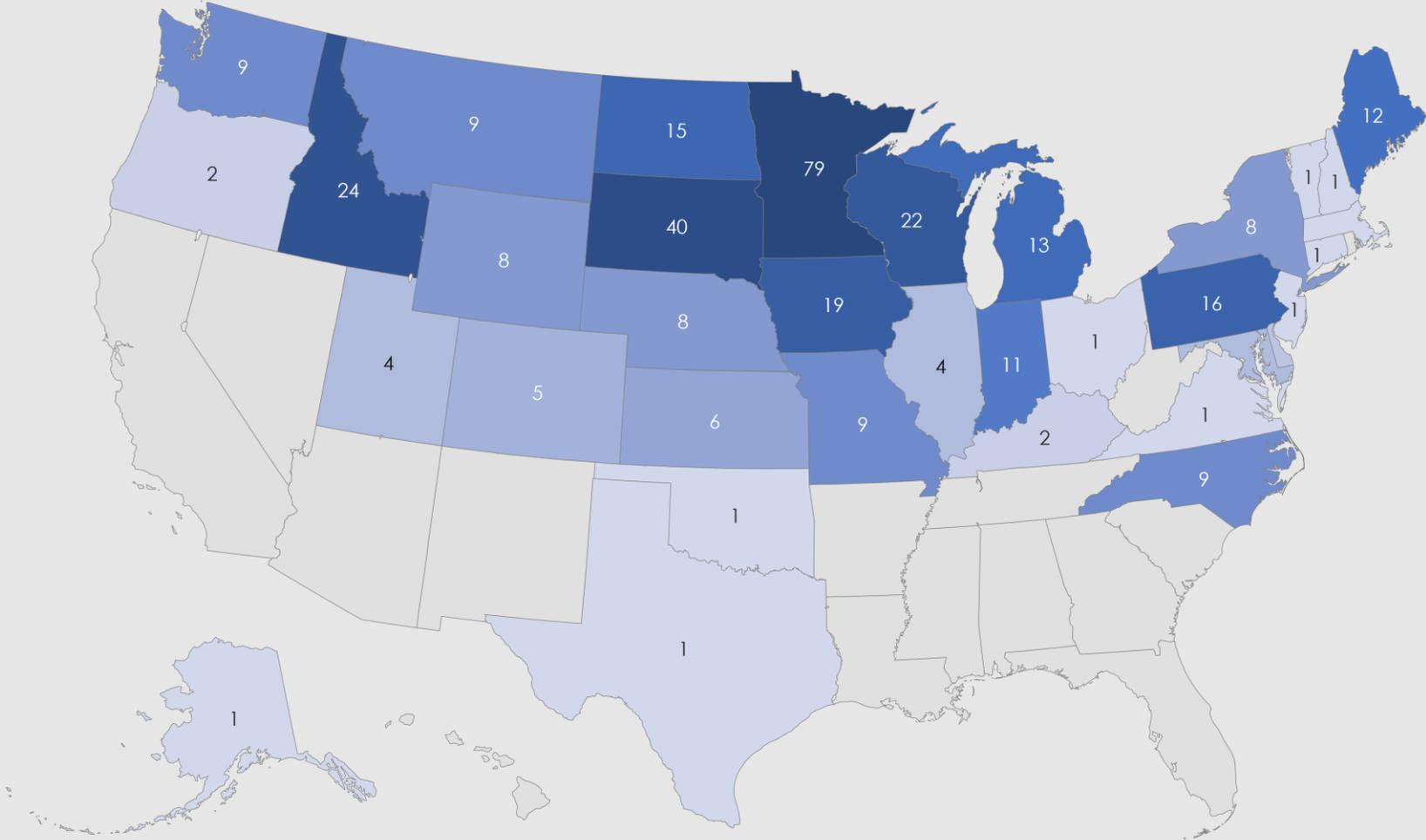
- Reported as of **May 17, 2022**
 - **1,190** detections
 - **37** states



2022 US Domestic Poultry* Detections

- USDA confirmed detections reported as of 12:00pm on May 24, 2022
 - 351 total premises in 35 states
 - 183 commercial premises in 20 states
 - 168 backyard/non-commercial premises in 28 states
 - Approximately 38.02 million birds affected

2022 US Domestic Poultry* Detections



Powered by Bing
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Image credit: map created by ME Lighty in Microsoft Excel using data from <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/avian-influenza/hpai-2022/2022-hpai-commercial-backyard-flocks>

2022 Maine Domestic Poultry* Detections

- 12 backyard/non-commercial flocks

County	Date of Confirmation	Flock Type	Number of Birds
Cumberland	3/22/2022	Backyard Mixed Species (poultry)	247
Knox	3/29/2022	Backyard Mixed Species (non-poultry)	46
Knox	3/19/2022	Backyard Mixed Species (non-poultry)	19
Knox	2/23/2022	Backyard Pet Chickens (non-poultry)	96
Lincoln	3/30/2022	Backyard Mixed Species (non-poultry)	3
Lincoln	3/17/2022	Backyard Mixed Species (non-poultry)	29
Lincoln	3/12/2022	Backyard Mixed Species (non-poultry)	98
Waldo	4/5/2022	Backyard Mixed Species (non-poultry)	47
Washington	3/26/2022	Backyard Mixed Species (non-poultry)	18
York	3/19/2022	Backyard Mixed Species (non-poultry)	65
York	3/14/2022	Backyard Mixed Species (non-poultry)	173

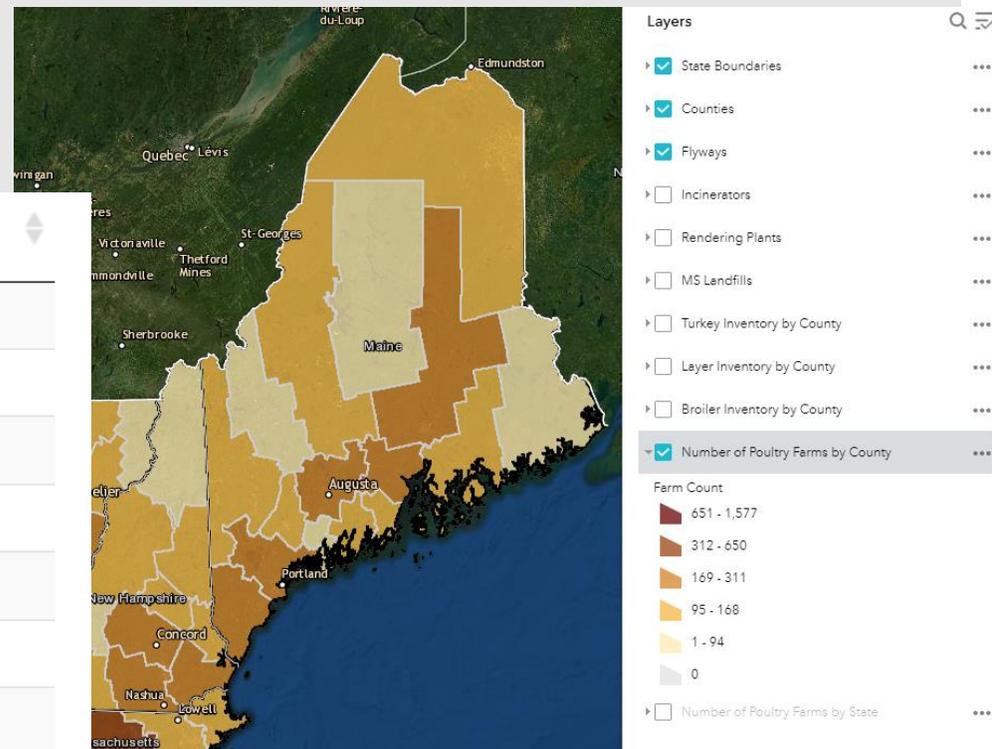


Image credit: <https://www.aphis.usda.gov/aphis/maps/Animal-Health/HPAI-Mapping>

Image credit: https://www.maine.gov/dacf/ahw/animal_health/hpai/index.shtml

Clinical Signs of HPAI May Include:

- **Sudden increase in mortality** (may see without any other clinical signs)
- Decreased energy and/or appetite
- Decreased egg production
- Soft-shelled, thin-shelled, or misshapen eggs
- Swelling or purple discoloration of the head, eyelids, or legs (shanks/feet)
- Difficulty breathing
- Coughing, sneezing, and/or nasal discharge
- Incoordination, stumbling
- Twisting of the head and neck
- Diarrhea

Clinical Signs of HPAI May Include:



Clinical Signs of HPAI

- Note that waterfowl (ducks, geese, etc.) are often **asymptomatic**
 - Reports of slight decrease in egg production in some commercial duck breeder flocks with current outbreak

Incubation period for HPAI

- Dependent on:
 - Dose of virus
 - Route of exposure
 - Species
 - Ability to detect clinical signs
- Individual bird
 - Clinical signs may appear within a few hours up to 3 days post-infection
- Flock
 - Up to 14 days for clinical signs/mortality to reach noticeable level on a flock basis

Who to Contact?

- Veterinarians that see poultry with clinical signs compatible with HPAI:
 - Call Maine State Veterinarian's Office: 207-287-3701
- Producers that do not have a flock veterinarian:
 - Call USDA sick bird hotline: 1-866-536-7593

Diagnostic Testing

- Do **NOT** bring/ship birds to the diagnostic lab if you suspect HPAI
- **PCR**
 - Samples to collect*
 - Oropharyngeal swabs for gallinaceous poultry
 - Cloacal swabs for waterfowl
- **Virus Isolation**
- Note: serology is NOT appropriate for detection of HPAI

Sampling source	Preferred Specimen	Sample Collection	Comment
Gallinaceous poultry (e.g., chickens, turkeys, pheasants, quail)	Tracheal or oropharyngeal (TR/OP) preferred Cloacal swab (CL) may be used	<ul style="list-style-type: none"> • FOR FADs – typically 5 swabs/pool in at least 3 mls of VTM • Up to 11 swabs/pool in at least 5mls of VTM pooled is valid only for TR/OP swabs from gallinaceous species^a Up to 5 swabs/pool at least 3 mls of VTM pooled by sample route and species	Virus usually shed via respiratory route; may be strain dependent
Domestic waterfowl (production)	CL preferred , TR/OP swab may be used	Up to 5 swabs/pool from a single flock and species in at least 3 mls of VTM	Virus usually shed via the enteric route; may be strain dependent – e.g., for H5 goose/Guangdong lineage, both OP and CL are recommended
Wild/captive waterfowl species ^c	TR/OP and CL swabs may be used	<ul style="list-style-type: none"> • Collect USDA Wildlife Services Surveillance samples by pooling 1 CL and 1 OP swab from a single bird in one 3ml VTM tube^b; this approach may also be used for captive waterfowl that are openly housed • Captive flocks in closed, common housing may be pooled 5 swabs/pool in at least 3mls VTM by sample route and species 	Wild migratory waterfowl are the natural reservoir for influenza A viruses (typically enteric shed)
Other wild/free living/captive /pet species	Typically, CL swabs ; fresh fecal samples may be used – call the NVSL for guidance	<ul style="list-style-type: none"> • Captive flocks in closed, common housing may be pooled 5 swabs/pool in at least 3mls VTM by sample route and species group (e.g., passerines) 	Shedding of influenza from non-host species can be variable and dependent on other factors such as immune status and virus strain
Any avian species	Tissue samples	Pool by system from a single bird (e.g., respiratory, enteric, reproductive) ^b - mince tissue and place in 3mls VTM	vND viruses may replicate to higher titres in tissues; brain tissue is preferred if neurological signs are noted

Diagnostic Testing

- Samples for HPAI testing from suspect (sick) birds or flocks:
 - Collected by a state/federal veterinarian or state animal health technician
- Samples for HPAI surveillance in healthy flocks:
 - May be collected by trained/approved poultry industry personnel

Diagnostic Testing

- PCR results reported as:
 - Not Detected
 - Non-Negative
- Non-Negative PCR results on testing performed at NAHLN lab plus clinical suspicion of disease → “presumptive positive”
- Confirmation:
 - Non-negative samples forwarded to the National Veterinary Services Laboratories (NVSL) in Ames, Iowa

Response Timeline

- Samples collected from flock
 - Sick birds – quarantine flock while waiting on test results
 - Surveillance testing
- Diagnostic testing at state lab
 - Not detected
 - Non-negative → FAD response initiated
- State Vet quarantines affected premise
 - No movement of birds, equipment, etc. on or off the site
- Sample(s) forwarded to NVSL for confirmation of HPAI

Response Timeline

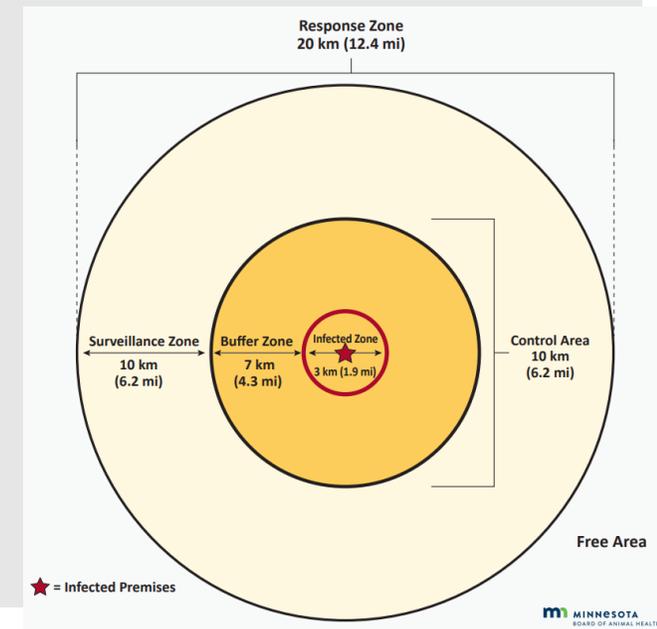
- Establish control & surveillance zones
- Depopulation of affected flock
- Disposal of birds and other infectious materials
- Virus Elimination
 - Dry Clean +/- Wet Clean
 - Heat Treatment, Wet Disinfection, or Fumigation
- Environmental sampling to verify live virus no longer present
- Fallow (empty) period – minimum 14 days
- Quarantine lifted
 - Premise allowed to restock with new birds

Response Timeline

- Duration of this response varies depending on:
 - Size and number of flocks on infected premise
 - Production type
 - Cage layers vs. floor-raised birds
 - Method of depopulation
 - Method of disposal
 - On-site burial
 - On-site composting
 - In-House vs. Outdoor
 - Off-site Landfill
 - Number of commercial and backyard/non-commercial flocks within control/surveillance zones
 - Method of Virus Elimination

Response to HPAI Detections

- Detection on a **POULTRY** premise
- Control Zone = 10km around infected premise
 - Comprised of:
 - Infected zone = 3km
 - Buffer zone = 3-10km
 - **ALL** poultry flocks within zone have been placed under a general quarantine order
 - Weekly* surveillance testing for all commercial flocks
 - Surveillance testing for subset of backyard flocks
 - Permits required for movement of birds, eggs, feed, manure, etc. out of, within, or into zone



Response to HPAI Detections

- Permits for Movement of Birds/Products within Control Zone
- Secure Poultry Supply Plan
 - Science-based recommendations for testing and Biosecurity prior to and during movement
 - Specific recommendations vary depending on type of bird/product being moved and intended destination
 - <https://securepoultrysupply.umn.edu/>

Movement type

Risk assesment overview

SPS PERMIT GUIDANCE- MOVING BROILER HATCHING EGGS FROM BREEDER FARM TO HATCHERY

RISK ASSESSMENT FOR MOVEMENT: Completed; USDA reviewed October 2012

Broiler hatching eggs from premises within an HPAI Control Area moving to hatcheries represent a **negligible to low risk**, provided that the permit guidance below has been met. Broiler hatching eggs moving to hatcheries may move within or out of the Control Area by permit.

PERMIT GUIDANCE INCLUDES:

1. Hatching eggs are moving from a premises that meets the criteria for a Monitored Premises designation and has a national premises identification number
2. Truck & driver biosecurity is implemented,
3. Product-specific biosecurity as described in individual plan (i.e., Secure Broiler Supply plan) is implemented
4. Eggs held for two days may move after RRT-PCR tests on two 11-bird pools of swabs from dead/sick breeder birds are negative- either 2 PCRs collected on 1 day within 24 hours of move; or 1 PCR collected on 2 consecutive days prior to move where at least 1 PCR taken within 24 hours c

1. Hatching eggs are moving from Premises designation and has a n **Permit criteria (what to do)** **criteria for a Monitored tion number.**

- A Monitored Premises objectively demonstrates that it is not an Infected Premises, Contact Premises, or Suspect Premises. Only At-Risk Premises are eligible to become Monitored Premises. Monitored Premises meet a set of defined criteria in seeking to move susceptible animals or products out of the Control Area by permit. For the Secure Poultry Supply Plans, the following criteria must be met:
 - Pre-movement RRT-PCR testing is negative,
 - Epidemiological questionnaire is completed,
 - No unexplained mortality, no unexplained clinical signs, and no unexplained changes in production parameters, and
 - Biosecurity measures are acceptable to state and federal authorities.
- For permitted movement through EMRS, an accurate national premises identification number (i.e., 7 character alphanumeric code as described in 9 CFR § 71.1, not the state ID) or other acceptable ID system for movement is required.

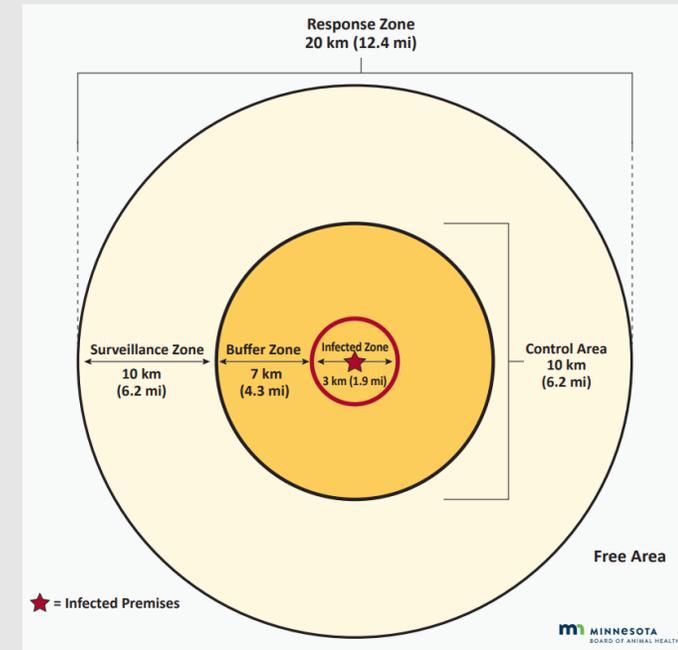
2. Truck & driver biosecurity is implemented,

- The cargo interior and exterior of the transport vehicle must be cleaned and disinfected (C&D).
- The driver will not be allowed outside the cab or else the cab interior must also be C&D.
- The vehicle tires, wheel wells and undercarriage must be power washed before leaving the breeder farm premises within the Control Area.

Details for the permit criteria (how to do what you need to do)

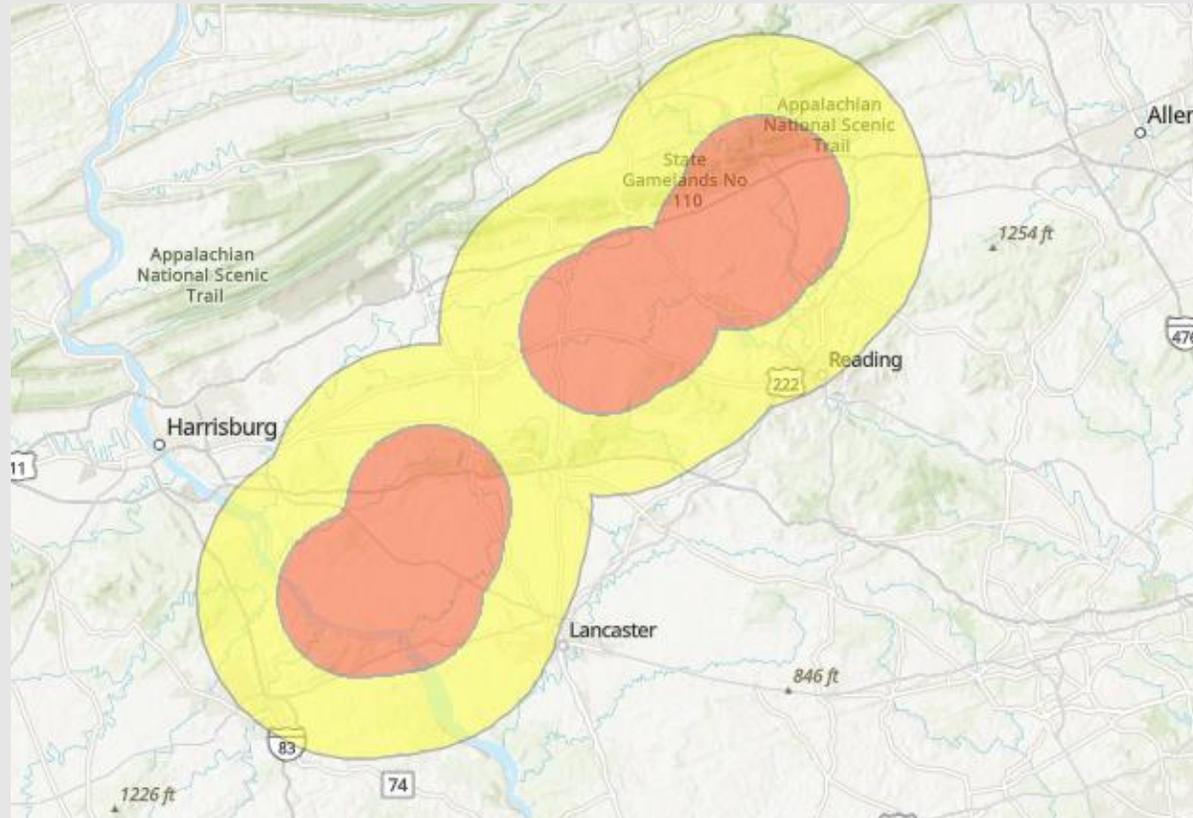
Response to HPAI Detections

- Detection on a **POULTRY** premise
- Surveillance Zone = 10-20km around infected premise
 - Surveillance testing for all commercial flocks
 - Surveillance testing on subset of backyard flocks
 - No quarantines or movement restrictions



Response to HPAI Detections

- Overlapping zones with multiple infected premises



Response to HPAI Detections

- Detection on a **NON-POULTRY** premise
 - No Control Zone is established
 - Surveillance Zone = 10km zone around infected premise
 - Surveillance testing for commercial and backyard flocks
 - No movement restrictions within the Surveillance Zone

Response to HPAI Detections

- Requirements for release of control/surveillance zones
 - Last infected premise in control area depopulated with mortality disposal completed
 - Compost pile capped
 - Buried on-site
 - Removed from premise for off-site disposal
 - Initial virus elimination activities on last infected premise are completed
 - Note: does not include completion of virus elimination of barn interiors
 - Completion of required surveillance testing within the control zone
 - 14 days with no additional HPAI detections within the control zone after completion of above steps

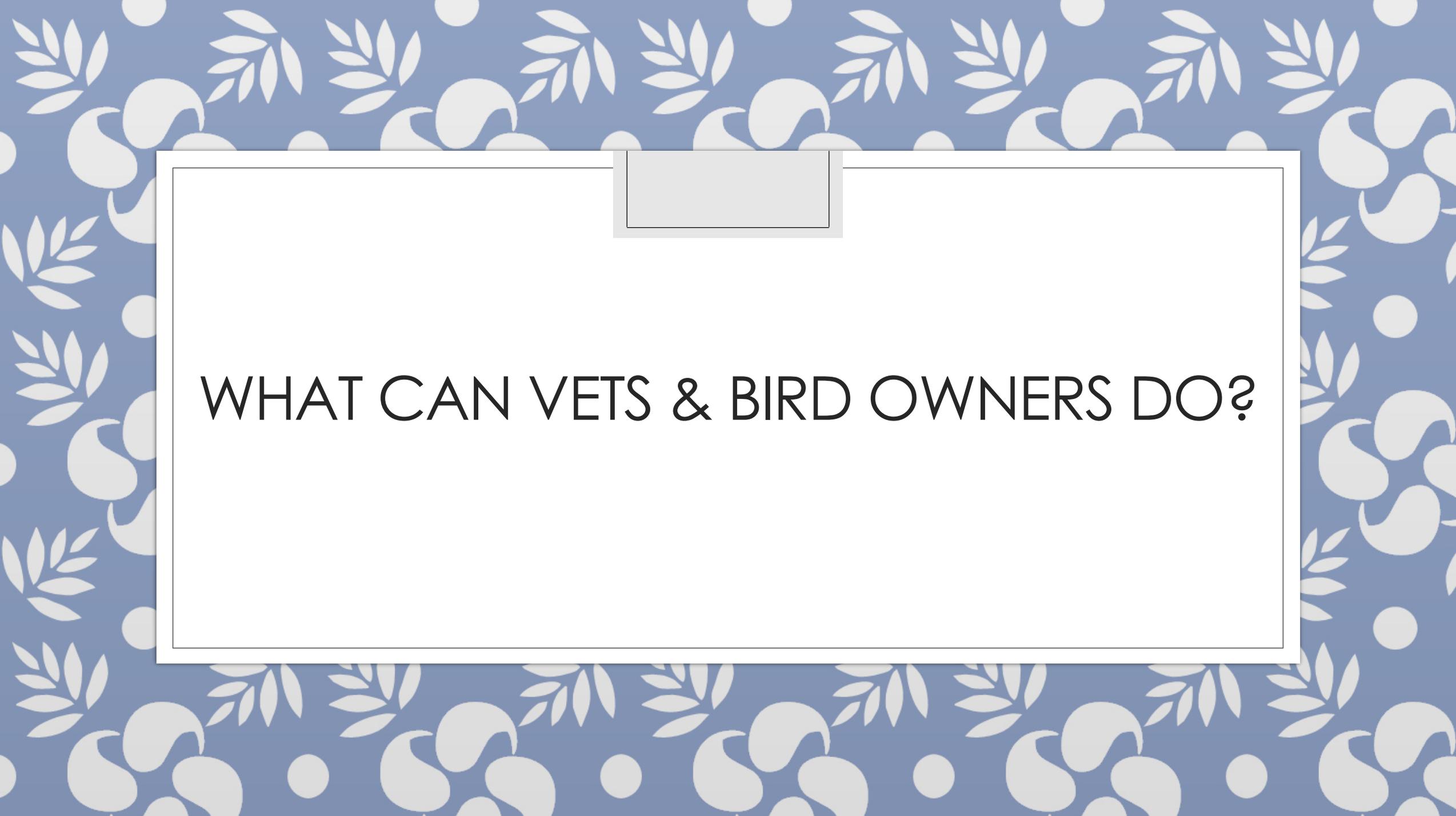
Response to HPAI Detections

- Quarantine on Infected Premise(s)
 - Remains until **ALL** virus elimination activities are completed
 - Minimum of 14-day fallow (empty) period after C&D
 - If premise C&D not possible – longer fallow period required
 - Up to 150 days



“Handling HPAI: Understanding the transmission, disease, diagnostics, and how to respond to this FAD”

5 Minute Break



WHAT CAN VETS & BIRD OWNERS DO?

Register Poultry Premises

- VOLUNTARY programs:
 - National Poultry Improvement Program (NPIP)
 - ME DACF Main Office: 207-287-3701
 - ME DACF Poultry Health Technician: 207-557-4623
 - ME DACF Poultry Program Manager: 207-592-6698
 - Go online: https://www.maine.gov/dacf/ahw/animal_health/index.shtml#poultry
- Obtain Premise ID through Maine's Animal Health office:
 - Call office directly: 207-287-3701
 - Register online: https://www.maine.gov/dacf/ahw/animal_health/adt/pin-registration.shtml

Control of HPAI

- Vaccination?
 - Not currently allowed in the United States
 - Impacts on international trade
 - Current vaccines do not allow for differentiation between vaccination and infection
 - Serology is the primary method for AI surveillance in the US
 - Cost and logistics of vaccine administration

Prevention of HPAI

- **Biosecurity!!!**

- Goal is to keep “outside-out” and “inside-in”
- Principles can be applied to any size operation



Avian Influenza Virus Persistence

Material/Substance	Temperature (°F)	Duration (Days unless otherwise noted)
Water ^a	82.4	26-30
	62.6	94-158
Liquid Feces ^a	39.2	30-35
	68.0	7
	77.0-89.6 ^b	4
Dry Feces ^a	N/A	14
Wet & Dry Feces ^d	107.6	18 hours
Dried Egg White ^f	152.6	20 hours
	129.9	513 hours (21.4 days)
Feathers ^e	68.0	15
Culture Media ^c	Room Temp.	15
	Refrigeration Temp.	243
Soil ^c	41.0	365
	71.6	49
Surfaces (e.g., steel, tiles, tire, plastic, etc.) ^c	N/A	3

Biosecurity for Small Poultry Flocks

- Maintain a line of separation around the flock
 - Walls of a barn or coop
 - Fence of a run, pen, yard, or pasture
- Consider potential risks from anything crossing over that line
 - Other birds/animals
 - People
 - Tools
 - Equipment

Biosecurity for Small Poultry Flocks

- Prevent contact between wild birds/feces and your flock
 - If possible, keep your birds inside
 - Maintain your barn, coop, and/or fencing to prevent entry by wild birds
 - Consider adding netting or tarp over outdoor areas



Biosecurity for Small Poultry Flocks

- Prevent contact between wild birds/feces and your flock
 - Discourage wild birds from congregating near your flock
 - Clean up feed spills immediately
 - Minimize habitats for wild birds
 - E.g., standing water, overgrown weeds/vegetation, etc.



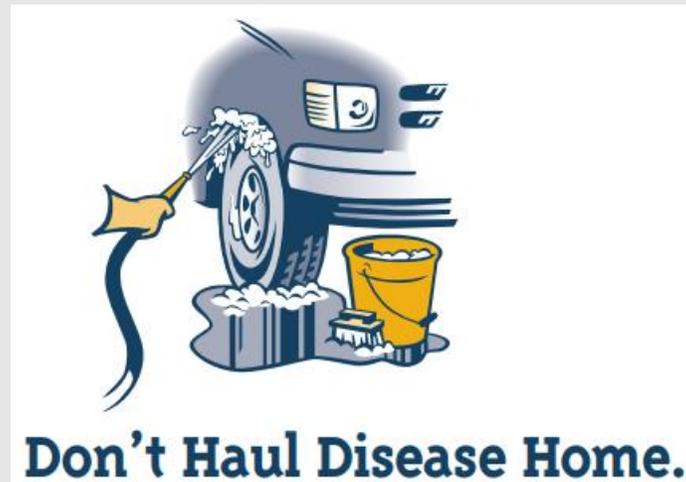
Biosecurity for Small Poultry Flocks

- Limit your contact with wild birds or their feces
 - Avoid places where wild birds, especially waterfowl, congregate
 - E.g. parks, ponds, etc.



Biosecurity for Small Poultry Flocks

- Limit your contact with wild birds or their feces
 - If you do come into contact with wild birds/feces:
 - Shower and change clothes (including footwear) before returning to your flock
 - Wash and disinfect vehicle



Biosecurity for Small Poultry Flocks

- Limit your contact with wild birds or their feces
 - Hunting wild birds, especially waterfowl, is a **huge risk** right now
 - Avoid if possible
 - Wear gloves when handling and dressing carcasses
 - Dress carcasses and dispose of waste at a location away from your flock
 - Wash and vacuum the vehicle used for hunting or other outdoor activities before returning to your flock
 - Shower and change clothes (including footwear) before returning to your flock

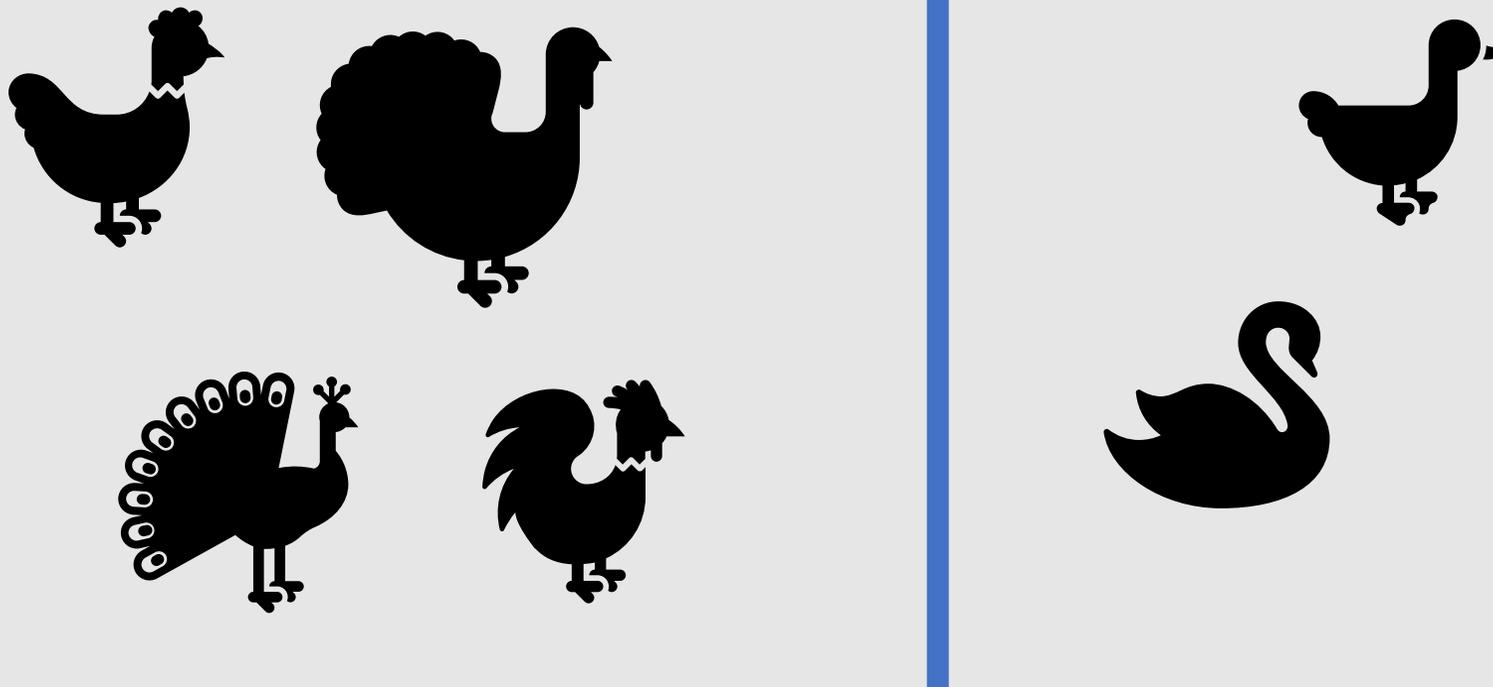
Biosecurity for Small Poultry Flocks

- If you have a mixed flock:
 - Keep gallinaceous birds (e.g., chickens, turkeys, etc.) separated from waterfowl



Biosecurity for Small Poultry Flocks

- If you have a mixed flock:
 - Keep gallinaceous birds (e.g., chickens, turkeys, etc.) separated from waterfowl



Biosecurity for Small Poultry Flocks

- Wash hands before and after working with poultry flocks



Biosecurity for Small Poultry Flocks

- Have dedicated clothes/coveralls and footwear/shoe covers for use only when working with your flock
 - Separate set of clothes and shoes
 - Cloth or disposable coveralls
 - Rubber boots or disposable shoe covers



Image credit (left): <https://www.premier1supplies.com/media/13670.jpg>

Image credit (middle): <https://www.qcsupply.com/safetrackhd-high-traction-boot-covers.html>

Image credit (right): <https://farmerboyag.com/short-sleeve-coveralls-tall-2x-large-50-54-inch-chest/>

Biosecurity for Small Poultry Flocks

- Store boots/coveralls near entry to coop/pen/yard/pasture
 - Waterproof storage container



Biosecurity for Small Poultry Flocks

- Footbath near entry to barn/coop/pen/pasture
 - Footbath must be kept clean
 - Disinfectant should be refreshed frequently
 - Boots must be free of visible organic matter
 - If kept outdoors, chose a style with lid
 - Liquid disinfectant not effective when temps are below freezing



Image credit (top right): https://www.sterilex.com/wp-content/uploads/2020/11/foot_pan_boot_square.jpg

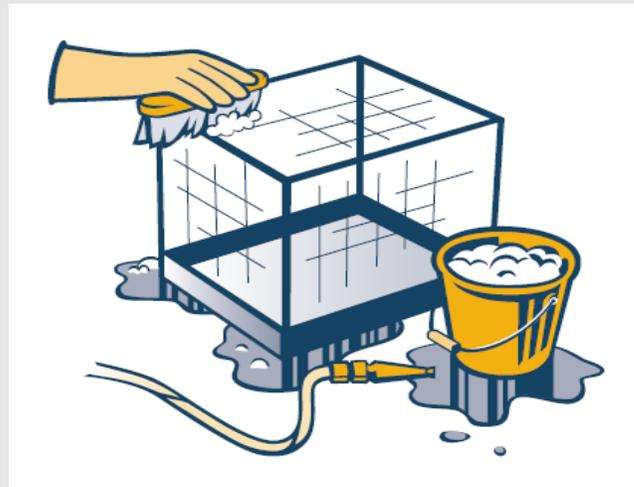
Image credit (lower right): <https://www.daltonengineering.co.uk/products/footcheck-foot-bath>

Image credit (middle): <https://www.hantover.com/Wearwell-222-Tall-Wall-Sanitizing-Footbath-Mat-32in-x-39in/89251/p>

Image credit (left): <https://www.chickenwhispermagazine.com/health-and-wellness/a-review-in-biosecurity-disinfection-mat-brings-peace-of-mind>

Biosecurity for Small Poultry Flocks

- Don't share tools or equipment with other bird owners
- When possible, store tools and equipment inside
- Clean and disinfect all tools and equipment before bringing it into your barn/coop/pasture/etc.



Biosecurity for Small Poultry Flocks

- Feed
 - Store feed in a dry, covered location
 - Prevent access by wild birds, rodents, other animals
- Water source
 - Avoid use of surface water (e.g., ponds) for drinking or cleaning purposes
 - Municipal or ground water sources pose a lower risk for contamination



Biosecurity for Small Poultry Flocks

- Limit visitors to your flock
 - Essential visitors only
 - People helping to care for your birds or for repairs/maintenance
 - Ask about their contact with other birds before allowing near your flock
 - Keep extra coveralls/boots/shoe covers for visitors
 - Keep a record of all visitors
- Don't visit other flocks

Biosecurity for Small Poultry Flocks

- Limit visits to places like feed stores, farm supply stores, etc.
 - If possible, visit at the end of the day
 - Shower and change clothes (including footwear) before returning to your flock



Biosecurity for Small Poultry Flocks

- Introducing new birds to your existing flock:
 - Source birds from NPIP participating hatcheries or flocks
 - Quarantine new birds away from existing flock for a minimum of 30 days
 - Should also isolate birds returning from shows/fairs

Biosecurity for Small Poultry Flocks

- Currently in a period of “elevated risk”
- There is **never** a time when there is no risk of disease introduction
- Biosecurity practices will help limit risk of many diseases, not just avian influenza
- Encourage all poultry owners to have a written biosecurity plan and register their flock

Biosecurity for Veterinarians

- If you make field visits:
 - Consider Biosecurity when visiting clients with backyard poultry, even if the poultry are not your intended patient(s)
 - PPE
 - Rubber/disposable boots
 - Coveralls
 - Vehicle
 - Tools/Equipment

Public Health Concern

- CDC: No immediate public health concern from this H5N1 virus
 - Always wash your hands after handling birds
- Avian influenza is not a foodborne pathogen
 - No eggs/meat from known infected flocks enter the food supply
 - As always, follow safe meat/egg handling guidelines
 - Cook poultry and eggs to internal temperature of 165°F



Future Outlook



Want Additional Information?

- Updates on current situation:
 - National: <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/avian-influenza/2022-hpai>
 - Maine: https://www.maine.gov/dacf/ahw/animal_health/index.shtml
- Biosecurity Information:
 - USDA Defend the Flock: <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/defend-the-flock-program>
 - Penn State Extension Webinar: <https://extension.psu.edu/highly-pathogenic-avian-influenza-alert-and-biosecurity-for-small-poultry-flocks>
- USDA HPAI Response Documents:
 - <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/emergency-management/hpai/fadprep-hpai>

More Information posted in Chat

- EPA LIST OF REGISTERED ANTIMICROBIAL PRODUCTS FOR HPAI:
 - <https://www.epa.gov/pesticide-registration/list-m-registered-antimicrobial-products-label-claims-avian-influenza>
- STATE OF MAINE MECHAP WEBINARS POSTED TO:
 - https://www.maine.gov/dacf/ahw/animal_health/index.shtml
- USDA HPAI Response Documents:
 - <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/emergency-management/hpai/fadprep-hpai>

Questions?

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