

Highly Pathogenic Avian Influenza (HPAI)



Veterinarians from the federal and state Departments of Agriculture catch birds either infected or exposed to avian flu at a backyard farm in Richland, Wash. Credit Bob Brawdy/The Tri-City Herald, via Associated Press

Good Morning!

- Background
- NC plans
 - Epi/ Surveillance
 - Laboratory
 - Antiviral medications
- Next steps

HPAI: Outline

- I. Avian influenza
 - Background
 - Current situation
 - Human risk
- II. Public health roles
 - Action items when first positive bird is identified
 - Management of illness among exposed persons
- III. Public health preparedness

What is Avian Influenza?

- Influenza A viruses carried by wild aquatic birds
 - Usually asymptomatic in reservoir species
 - Shed in saliva, nasal secretions, feces
- Defined as highly pathogenic (HPAI) or low pathogenic (LPAI) based on
 - Mortality in chickens
 - Genetic markers

Avian Influenza: Risk to People

- Human cases have occurred rarely
 - Contact with infected birds
 - Contact with birds' secretions/excretions
- H5 and H7 avian influenza viruses considered higher risk for human infection
- Two ongoing outbreaks of human illness
 - HPAI H5N1 (since 2003)
 - LPAI H7N9 (since 2013)

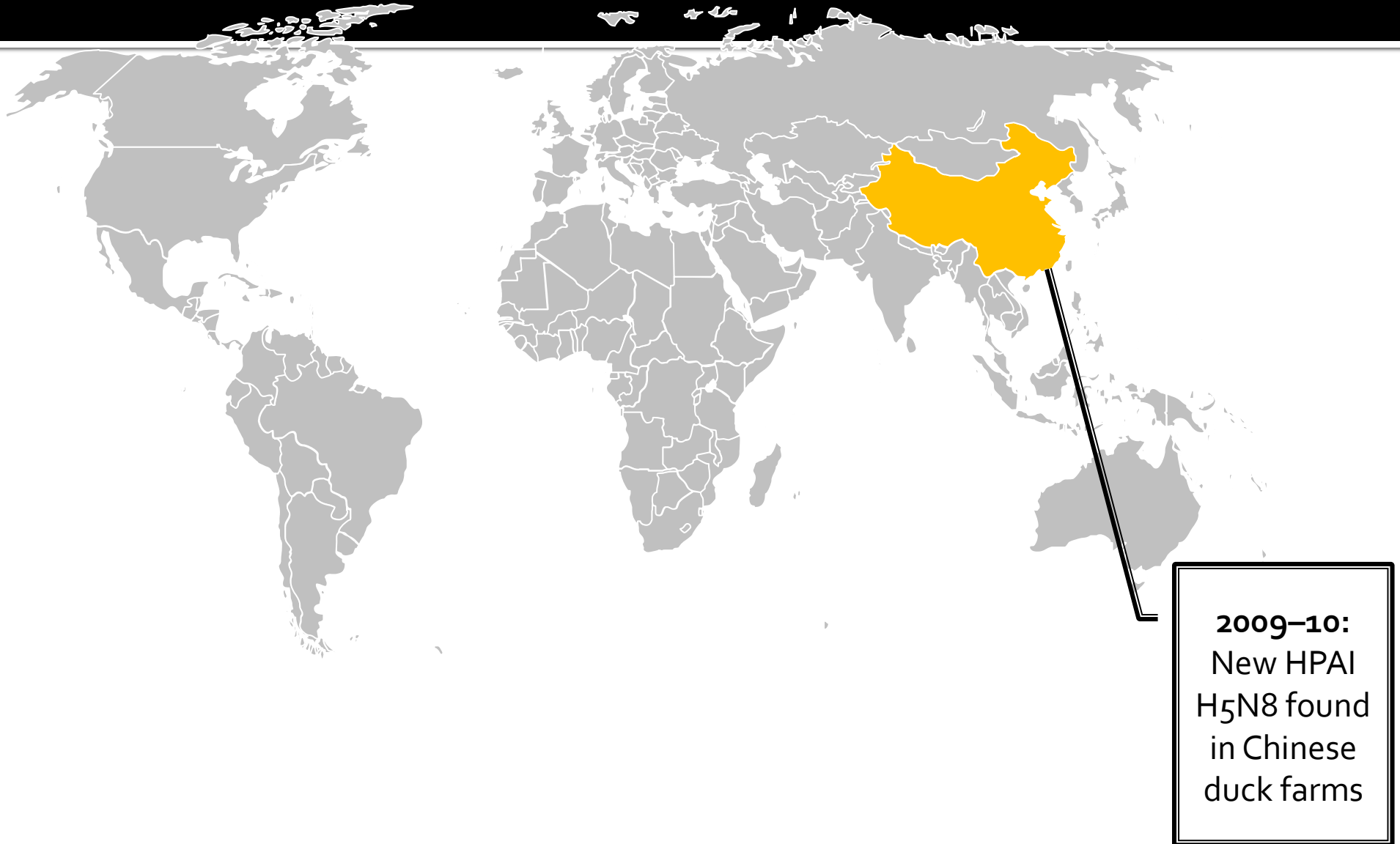
HPAI in Birds: A Brief History

- Rarely detected in wild birds prior to 2014
 - Exception: H5N1 in Asia since 2002
- No historical evidence for HPAI in North American wild birds
 - >400K wild birds tested during 2006–2011
- Only one report of HPAI in US commercial poultry since 1997
 - Texas 2004 (H5N2 virus)

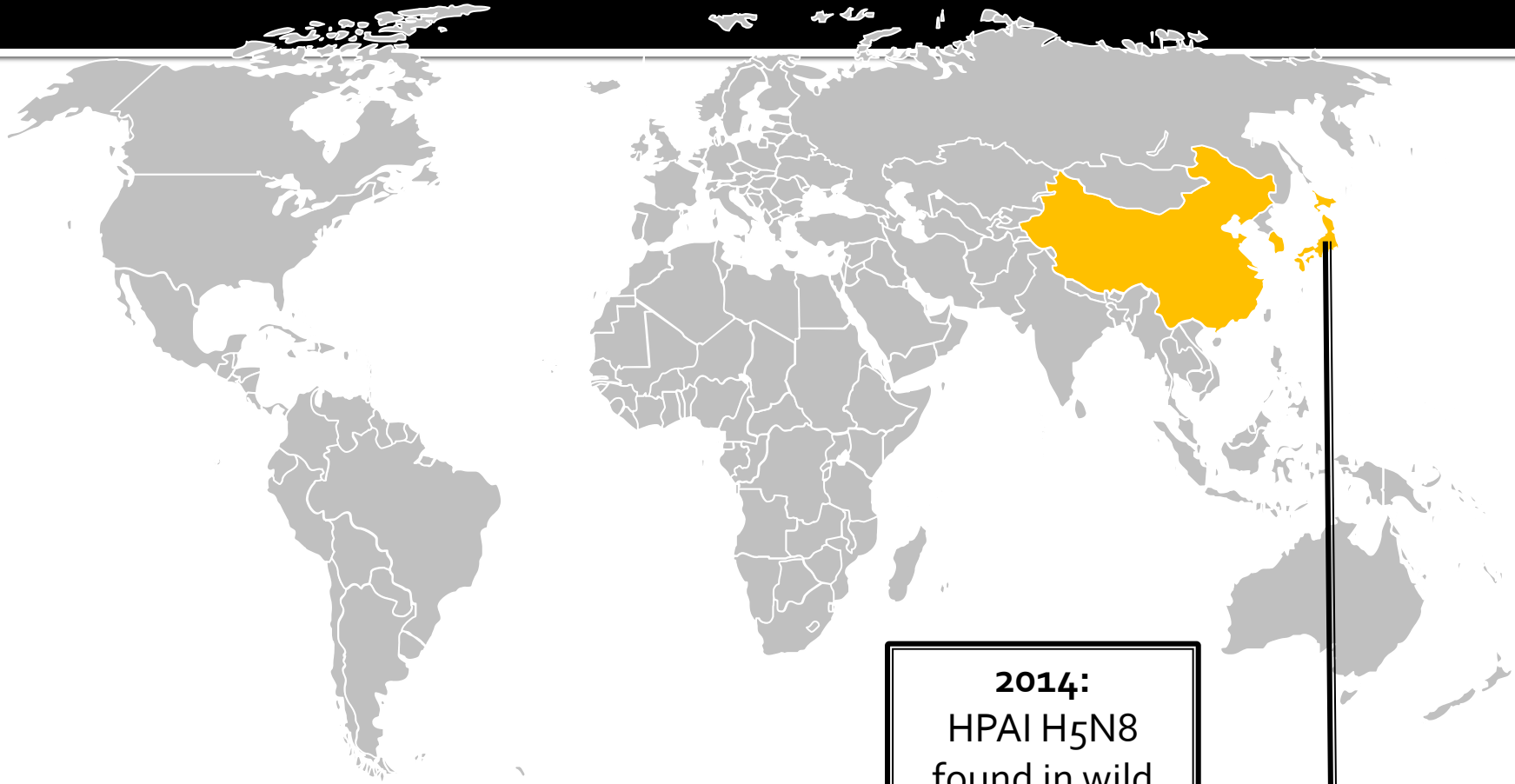
HPAI in Birds: Recent Developments



HPAI in Birds: Recent Developments

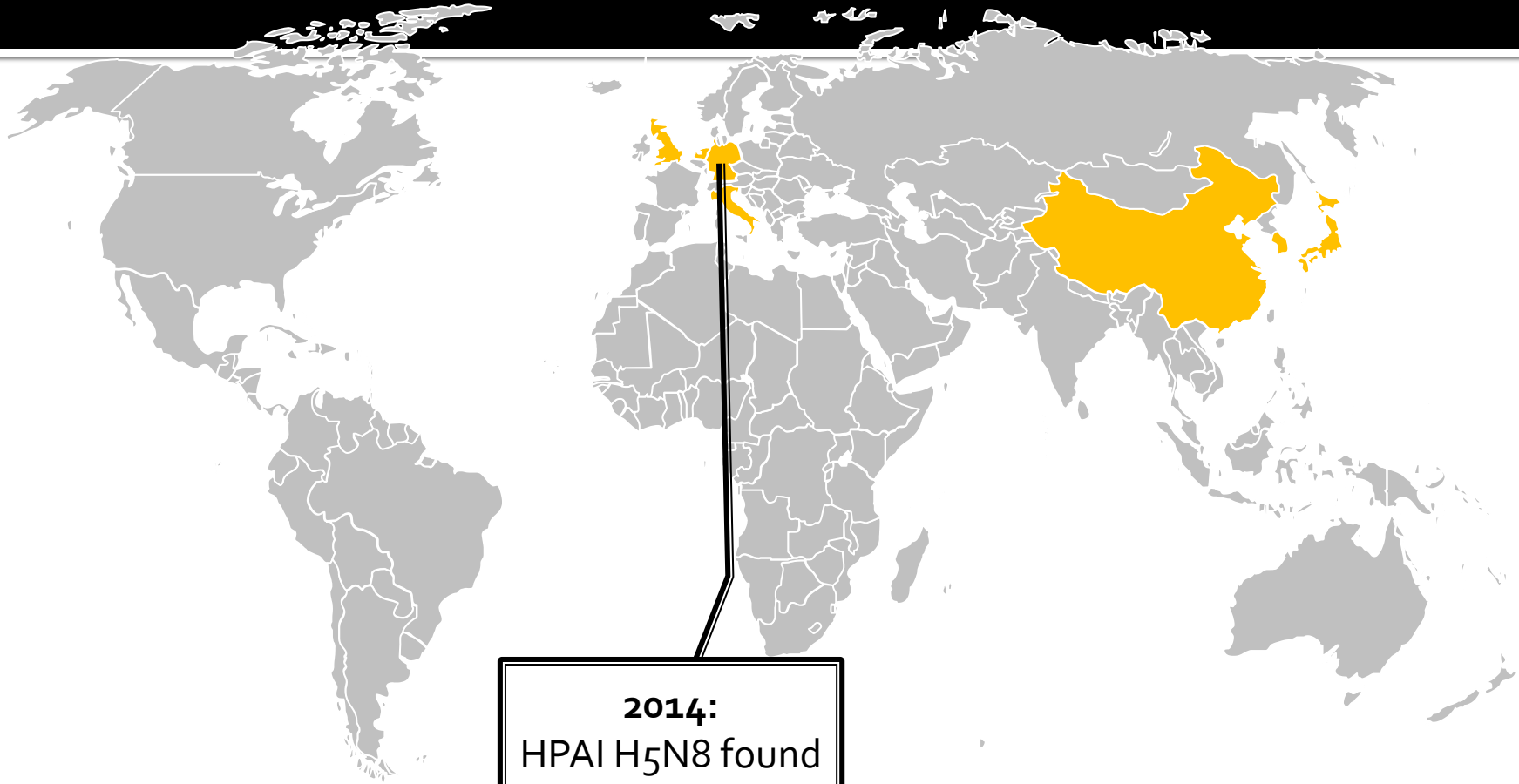


HPAI in Birds: Recent Developments



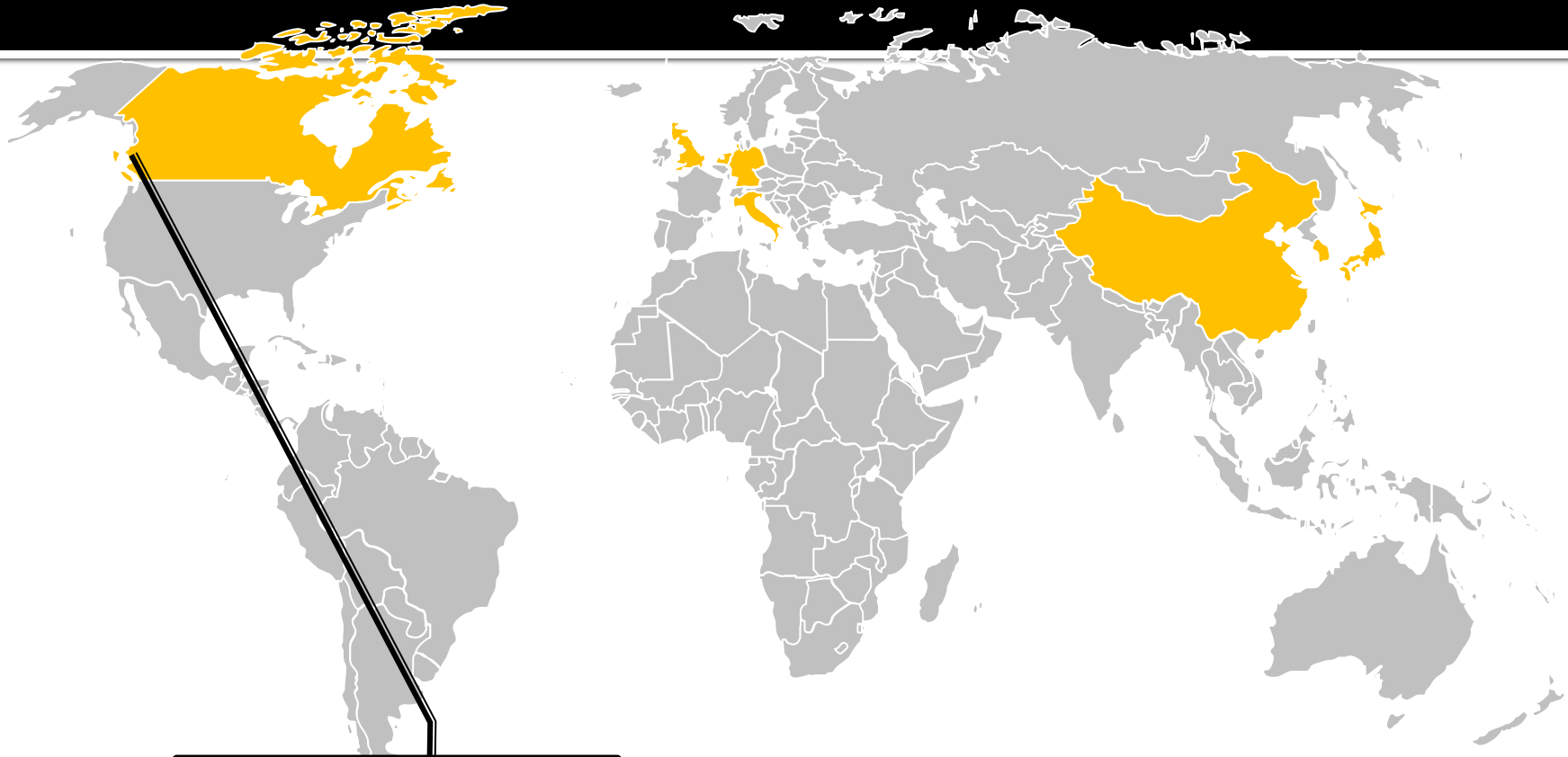
2014:
HPAI H5N8
found in wild
birds and
poultry in
Korea and
Japan

HPAI in Birds: Recent Developments



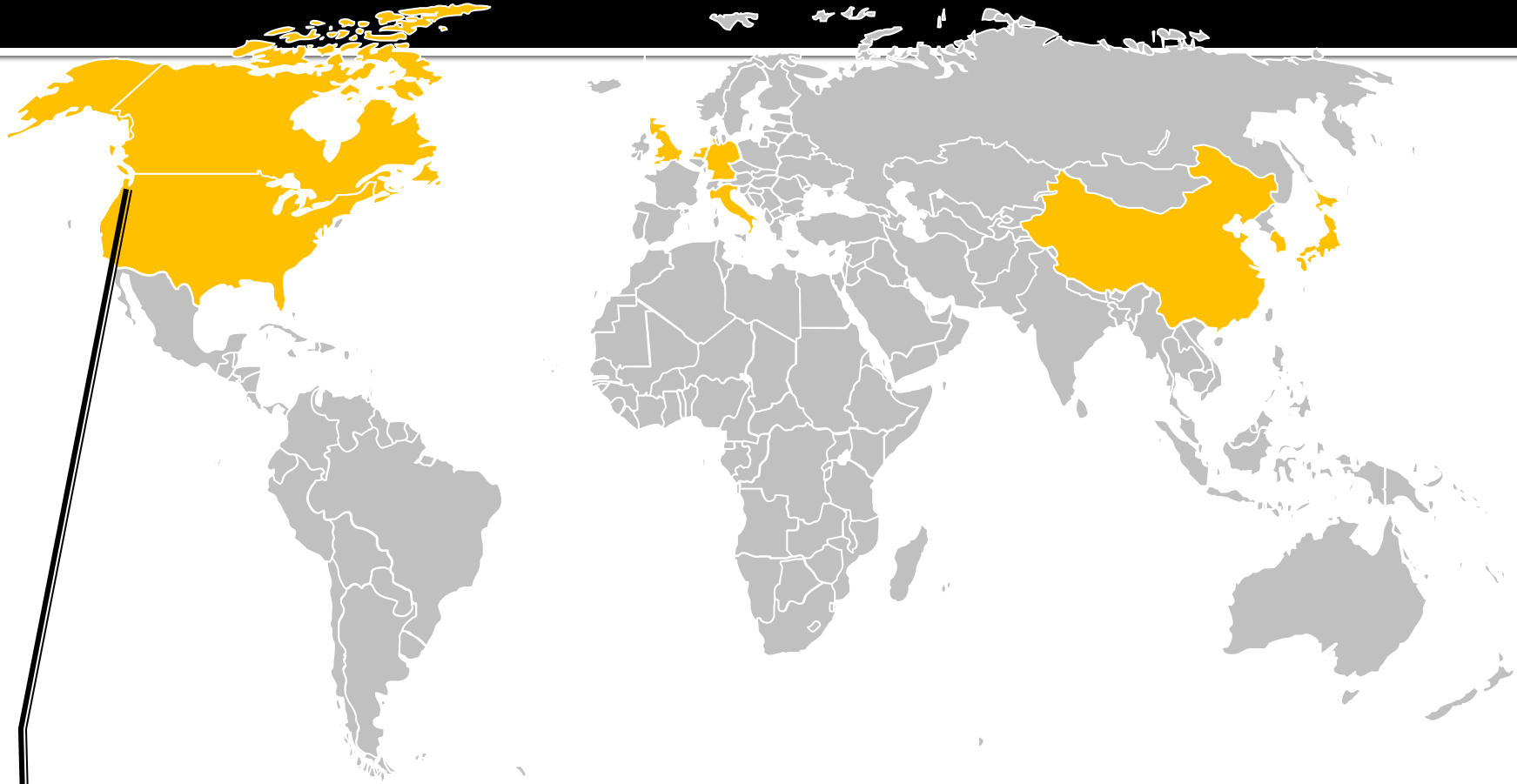
2014:
HPAI H5N8 found
in wild birds in
England,
Netherlands,
Germany, Italy

HPAI in Birds: Recent Developments



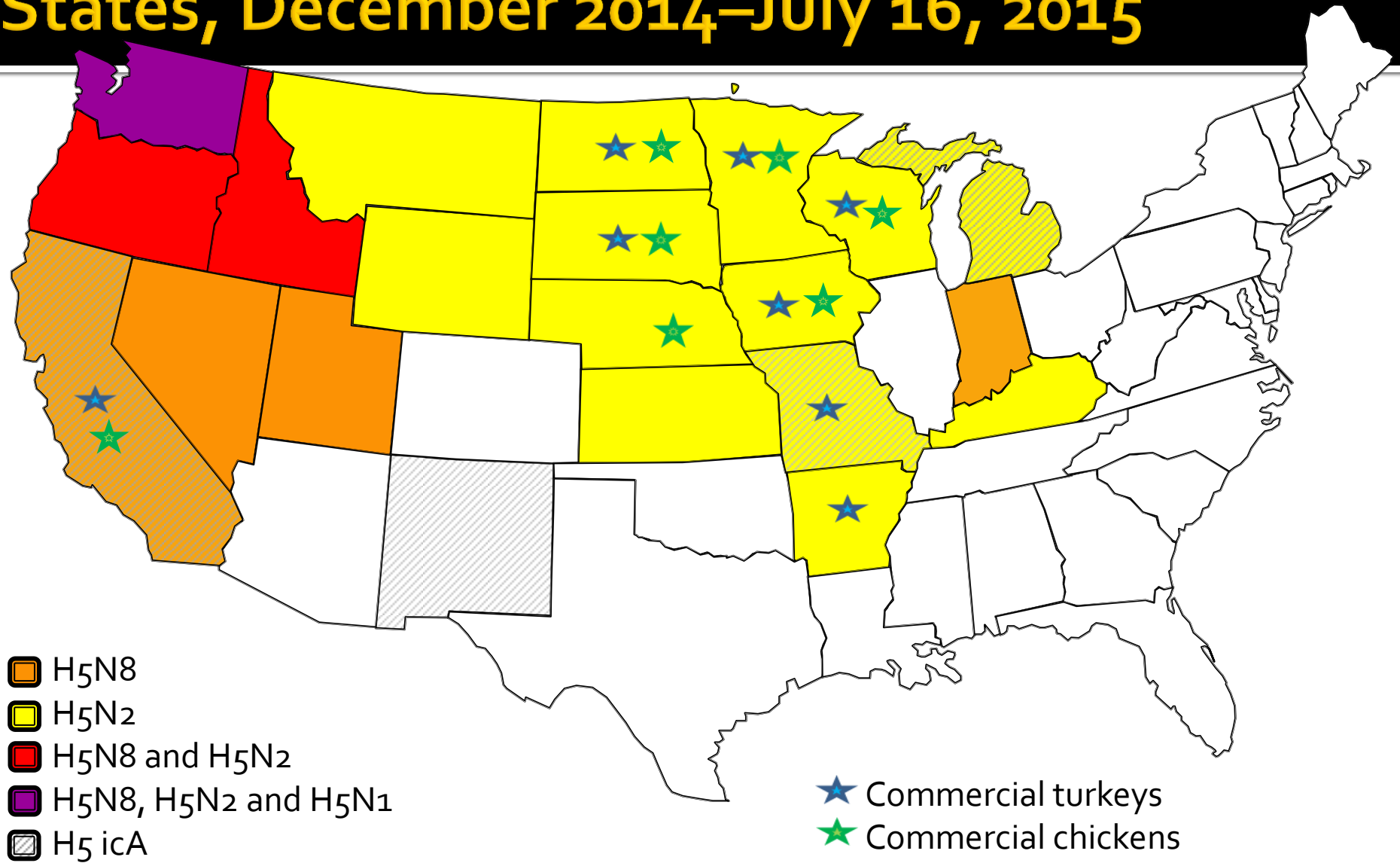
November, 2014:
Similar HPAI H5
(H5N2) in North
American birds

HPAI in Birds: Recent Developments



December, 2014:
Detection of similar
virus (H5N1) in US

HPAI H5 in Domestic and Wild Birds — United States, December 2014–July 16, 2015



Number of HPAI H5 Detections in the US – December 2014–June 9, 2015

Species	H5N2	H5N8	H5N1	H5
Poultry	218	4	-	-
Captive Wild Bird	3	2	-	-
Wild Bird (as of 5/14)	35	22	3	12
Total Detections	256	28	3	12

- >48 million birds affected in 21 states
- Massive economic impact

Identification of First Positive Bird: Notification

- State health department will be notified by NCDA
- State will notify the local health department in which the positive bird is located

Local Health Department Roles

1. Investigation

- Identify community members exposed to HPAI

2. Monitoring and management of exposed persons

- Community members
- Responders from their county (if any) after the event

3. Communication

- Public
- Providers

Identifying Potential Contacts

- Contact with potentially-infected birds
 - Handling, slaughtering, de-feathering, butchering, culling, preparation for consumption
- Direct contact with surfaces contaminated with feces or parts of potentially-infected birds
 - Carcasses, internal organs
- Prolonged exposure to potentially-infected birds in a confined space

What's next?

- Administer exposure questionnaire and start a line list (example on next slide)
- If proper personal protective equipment was used consistently, then self-monitoring can occur
 - There may be a request for follow up call at the end of the monitoring period
- If proper personal protective equipment was not used consistently, then active monitoring will occur

HPAI contact questionnaire (partial view)

HPAI Contact Questionnaire

Hi, my name is _____, I am calling on the behalf of NC DPH and _____ county health department. This call is regarding your recent exposure to ill birds. I would like to ask you some questions about that exposure and help determine the level of assistance you may need from the health department.

Name: _____

Phone Number: _____

Date of Birth: ____/____/____

County of Residence: _____

Select Y/N

Deployed?	Yes	No	Farm worker	Yes	No
USDA Employee?	Yes	No	Visitor	Yes	No
NCDA Employee?	Yes	No	Other	_____	

1. Where did the exposure(s) occur (Name of Farm, Address, City, and/or County)?

2. Date of **FIRST** contact with infected birds (includes take down and set up of equipment, animal contact and depopulation activities): ____/____/____

3. Date of **LAST** contact with infected birds (includes take down and set up of equipment, animal contact and depopulation activities): ____/____/____

4. Did you wear personal protective equipment (PPE) during all direct exposure to sick or dead birds or infected flocks (direct exposure includes: contact with birds [e.g., handling, slaughtering, defeathering, butchering, preparation for consumption]; direct contact with surfaces contaminated with feces or bird parts [carcasses, internal organs, etc.]; or prolonged exposure to birds in a confined space)? Yes No Unknown

HPAI Symptom Monitoring Log

Highly Pathogenic Avian Influenza (HPAI) Symptom Monitoring Log

Name: _____		Date of initial exposure: ____/____/____			
County of Residence: _____		Date of last exposure (if known): ____/____/____			
Page ____ of ____	DATE _____	DATE _____	DATE _____	DATE _____	DATE _____
Initials of person monitoring: _____					
Medications:					
Fever-reducer / pain-relievers: Aspirin, Tylenol, Aleve, Motrin, Advil, Ibuprofen	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Antiviral drugs: (e.g. Tamiflu [oseltamivir] or Relenza [zanamivir])	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Symptoms					
Oral temperature (record)					
Muscle pain					
Runny nose					
Cough					
Sore throat					
Shortness of breath					
Nausea					
Vomiting					
Diarrhea					
Itchy, watery, inflamed eyes (conjunctivitis)					
Rash					
Fatigue (tired)					
Other (describe):					
Personal Protective Equipment use					
Used recommended PPE consistently*?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Recognized Break in PPE?	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Notes:					

*Recommended personal protective equipment includes: properly-fitted safety goggles, disposable gloves, boots, a NIOSH-certified respirator (e.g., N95), and disposable fluid-resistant coveralls.

CD NURSE TOOLKIT

There will be a tool kit posted online with the following documents:

- Symptom monitoring log
- Provider memo on HPAI
- Line list shell
- HPAI contact questionnaire

And any other documents that are needed.

Antiviral Chemoprophylaxis

- Oseltamivir or zanamivir
- Can be *considered* for all exposed persons
- Not routinely recommended for personnel who used proper personal protective equipment
- If used, treatment dose recommended
 - Twice normal prophylaxis dose
 - Might reduce potential for resistance

What if someone gets sick?

- If illness occurs within 10 days after exposure, public health will
 1. Arrange for testing for novel influenza A (details to follow); can't rule out HPAI with usual flu tests
 2. Make recommendations for antiviral usage (details to follow)
- Standard, contact, and airborne precautions are recommended
- Encourage social distancing/home isolation

Antiviral Treatment

- Empiric treatment with a neuraminidase inhibitor
 - Oral oseltamivir
 - Inhaled zanamivir
 - IV peramivir
- Treatment should NOT be withheld or delayed pending laboratory testing
- Treatment should be initiated as early as possible, even if >48 hours since illness onset

Antiviral Stockpiles

- Some lot numbers of oseltamivir distributed in 2009 during H1N1 have expiration date extensions into 2017 and MAY be used for an HPAI response.
 - Detailed information on specific lot numbers and use procedures will be distributed via email
- Antivirals held in the state stockpile are not currently available for use in an HPAI response due to terms of the purchase contract.
- Antivirals may be available via SNS

Specimen Collection and Shipping for possible HPAI samples

Presented by Peggy Brantley
Medical Laboratory Supervisor
NCSLPH
Viral Culture/Rabies Laboratory



Specimen Collection and Shipping

- The information in the following slides was taken from the CDC (www.cdc.gov) and NCSLPH (<http://slph.publichealth.com>) websites. Most of the information concerning specimen collection and shipment is the same as with any influenza specimen.

When to collect Specimens

- Specimens should be obtained **as soon as possible after illness onset**, ideally within 7 days.
- However, some persons shed virus for longer periods. Specimens may be tested for novel influenza A virus even if obtained after 7 days.

Preferred Respiratory Specimens

1. Nasopharyngeal swab
 2. Nasal aspirate or wash
 3. Two swabs combined into one viral transport media vial (e.g., nasal or nasopharyngeal swab combined with an oropharyngeal swab).
- If these specimens cannot be collected, a single nasal, or oropharyngeal swab is acceptable.

Preferred Respiratory Specimens (cont.)

Specimens for Patients with Lower Respiratory Tract Illness

- 1) Endotracheal aspirate
 - 2) Bronchoalveolar lavage fluid
- If possible, multiple respiratory specimens from different sites should be obtained from the same patient on at least two consecutive days.

Swabs

- Specimens should be collected using swabs with a synthetic tip (e.g., polyester or Dacron®) and an aluminum or plastic shaft. The swab specimen collection vials should contain 1-3ml of viral transport medium.

Transport Media and Storage

- Specimens should be placed into sterile viral transport media and immediately placed on refrigerant gel-packs or at 4°C (refrigerator) for transport to the laboratory and stored for no longer than 3 days. Specimens can alternatively be frozen at $\leq -70^{\circ}\text{C}$.

Labeling the Specimen

- Each specimen must be labeled with the patient's first and last name , either date of birth, or other unique identifier, specimen source and date of collection.
- Fill out **completely** and submit DHHS 3431 form located at <http://slph.ncpublichealth.com/forms>.
- Up to three specimens from the same patient can be submitted on one form.

Packaging

- 1) Wrap the properly labeled inoculated transport medium (primary container) in an absorbent material and place into a leak proof secondary container.
- 2) Place into an **insulated** container with enough refrigerants to keep the specimen cold during transport.
- 3) Place completed forms in a plastic bag and place inside container.

Shipping

- Any suspect influenza specimen should be shipped as a UN3373 Biological Substance, Category B and should be packaged and labeled accordingly. (see *slph.ncpublichealth.com* for detailed information)
- Method of shipment will depend upon the urgency of testing.

Shipping options

- State Courier, usually delivers overnight
- FedEx – priority overnight will be received by gam next business day
- If deemed an emergency by the communicable disease branch (CDB), the lab can arrange for the specimen to be transported by a private courier.

Shipping Address

Using FedEx or private courier

North Carolina State Laboratory of Public Health

4312 District Drive

Raleigh, NC 27607

Using State Courier

NC State Lab of Public Health

MSC 1918

Testing

- All initial testing will be performed at the NCSLPH after approval has been given by the CDB.
- Testing will take approximately 4 hours for one specimen.

Results

- Results will be phoned to the CDB and the Laboratory Director.
- Possible results are:
 - 1) Negative
 - 2) Presumptive Influenza A/H5 or H7
 - 3) Influenza A, unable to sub-type
 - 4) Inconclusive (was not able to detect the presence of RNaseP)

Results (cont.)

- Presumptive positives or an unable to subtype; will result in the CDC being notified immediately and arrangements made for the shipment of the specimen to the CDC.
- CDC usually has same day results once the specimen is received.

Conclusion

- Contact information:
Peggy Brantley
919-807-8820
Peggy.brantley@dhhs.nc.gov

Additional Items

- NC DA&CS is the lead agency
- Depopulation, disposal and clean-up plans
- Wildlife and hunter safety

NORTH CAROLINA
DEPARTMENT OF AGRICULTURE & CONSUMER SERVICES

NCA&CS Home | Programs | Services | Divisions | Newsroom | Search NCA&CS | NCA&CS Divisions

HOME | INDUSTRY

NORTH CAROLINA PREPARES FOR HIGHLY PATHOGENIC AVIAN INFLUENZA

CURRENT STATUS
North Carolina is free from HPAI
[Check National Status Here](#)

BIOSECURITY LEVEL
All N.C. poultry farms should be following
STRICT biosecurity protocols

Register for small flock owner regional informational meetings
Greensboro 9/1, Monroe 9/2, Nash 9/4,
Kenansville 9/8, Morganton 9/11

What is Avian Influenza? | Consumers/Food Safety | Biosecurity | Newsroom | FAQs
Small-Flock/Backyard Chickens | Wild birds and hunting | Fall ban on live bird shows/sales

What is avian influenza?
Influenza in poultry falls into two groups: low pathogenic avian influenza (LPAI), or highly pathogenic avian influenza (HPAI). Similar to influenza symptoms in

NC DPH HPAI workgroup

- Epi/Surveillance Plans
 - Post deployment
 - Community monitoring
 - Tool kit
- Supporting NC DA&CS
 - Fit testing
- Joint Information
 - Messages about food safety, personal protective measures, provider memo

Before the first positive bird

- Prepare with your provider community
- Attend the Cooperative Extension Services Responder Community Meetings
 - Nash County (North East) on Sept 4
 - Duplin County (South East) on Sept 8
 - Burke County (West) on Sept 11
- Prepare your “Epi Teams”



Questions?

- <http://www.cdc.gov/flu/avianflu/>
 - <http://www.ncagr.gov/avianflu/>
 - NCResponse@dhhs.nc.gov
-
- CDB On Call 919-733-3419
 - Domestic Poultry Reporting 919-707-3250
 - Wild Bird Reporting 919-707-0010