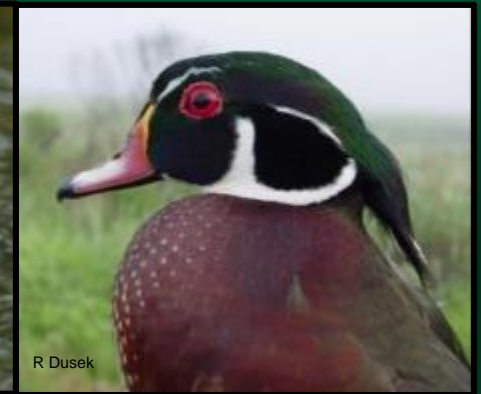


Highly Pathogenic Avian Influenza: The Role of Wildlife



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Outline

- **Intercontinental spread of Avian Influenza**
- **Migratory Bird Flyways**
- **Spread of Eurasian HPAI H5**
- **Current Status in Wild Birds**
- **Future Surveillance Plans**

Natural Reservoirs



Asymptomatic carriers

Intercontinental Spread

Poultry and Poultry Products



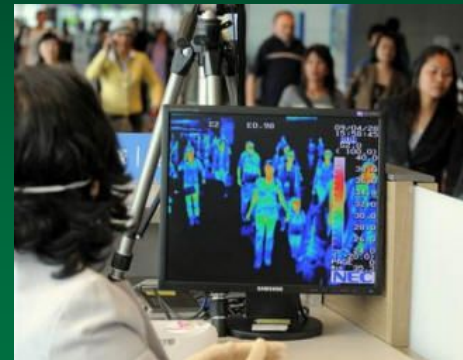
Pet and Wildlife Trade



Smuggling



People

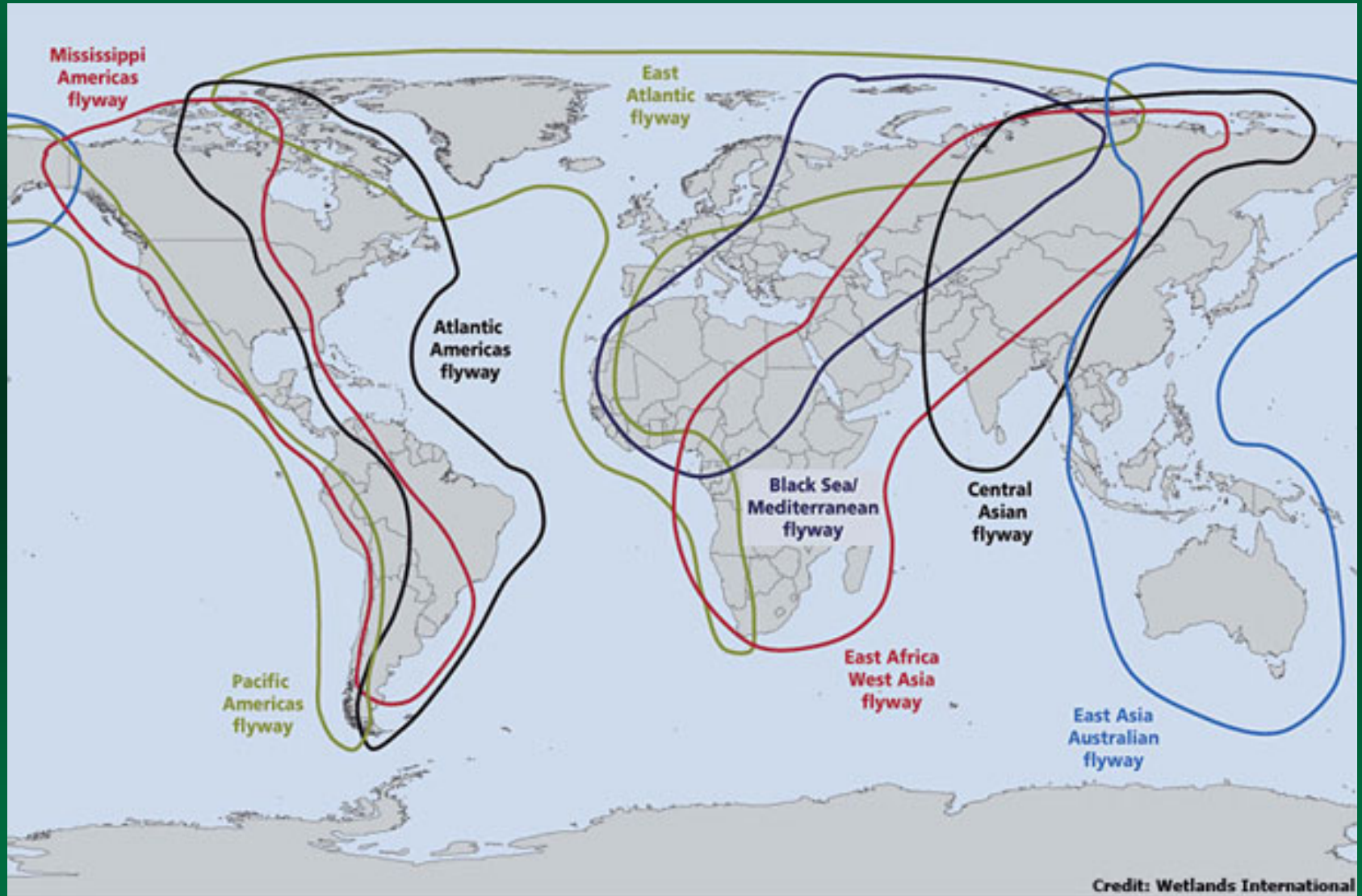


Intercontinental Spread

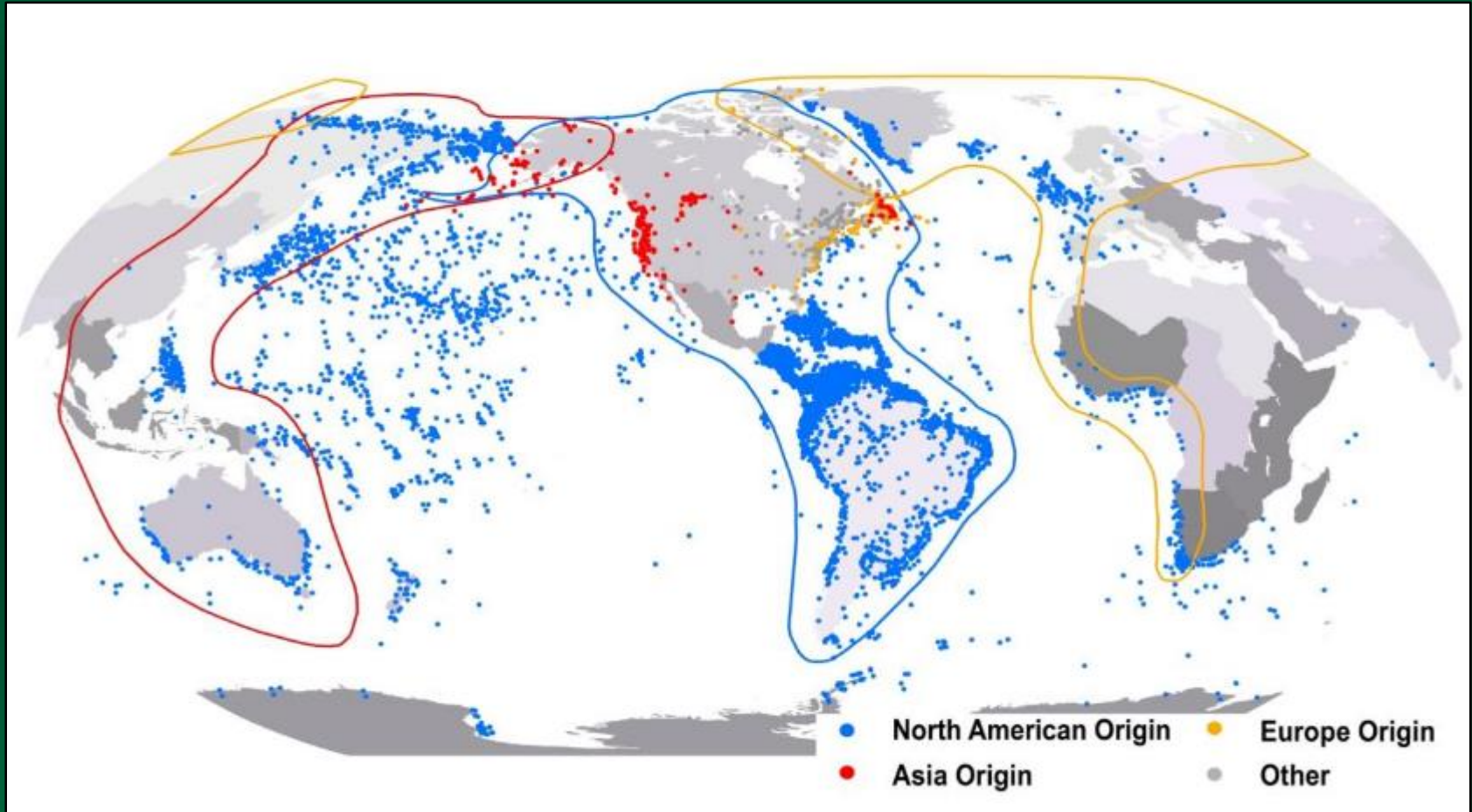
Wild Migratory Birds



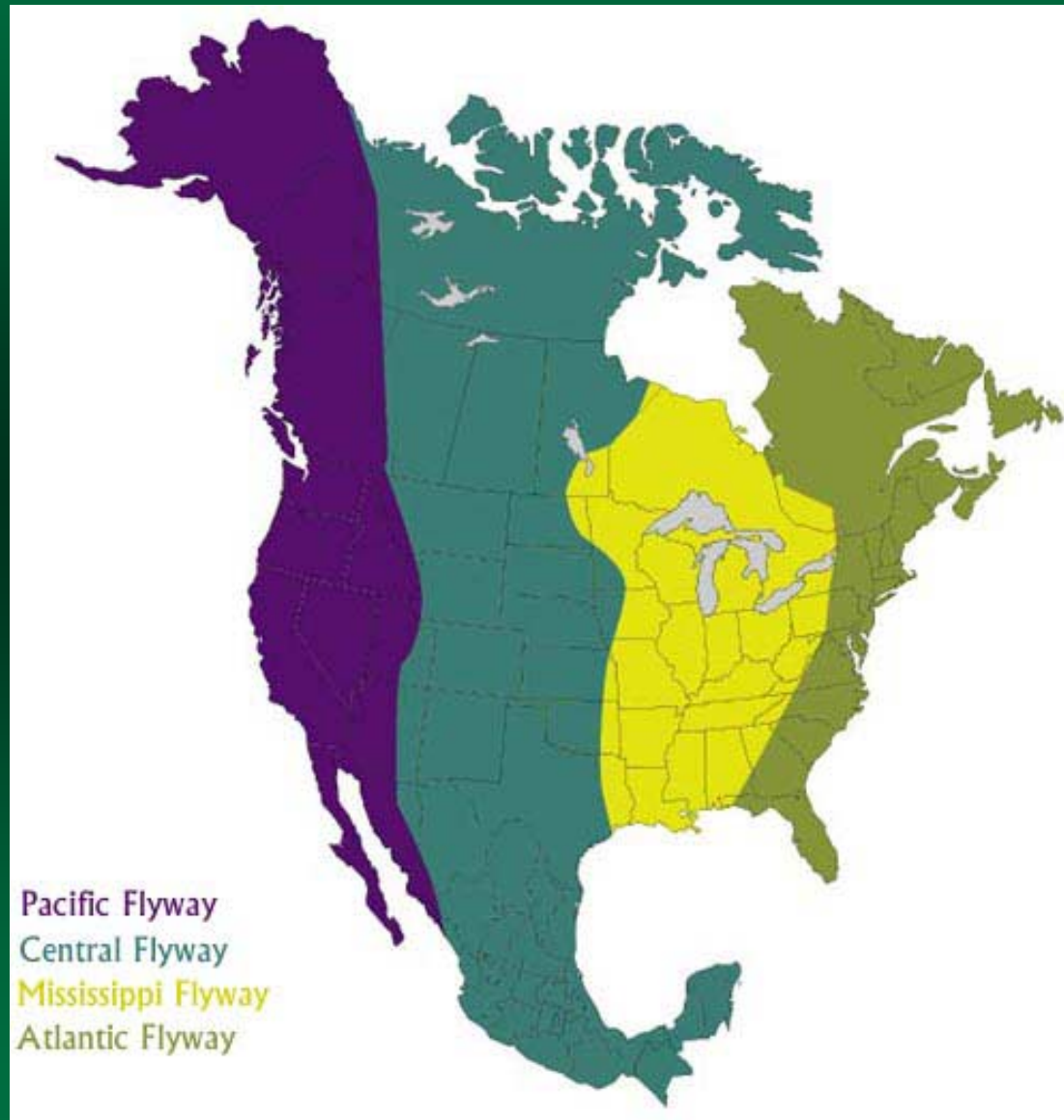
World Migratory Flyways



World Migratory Flyways



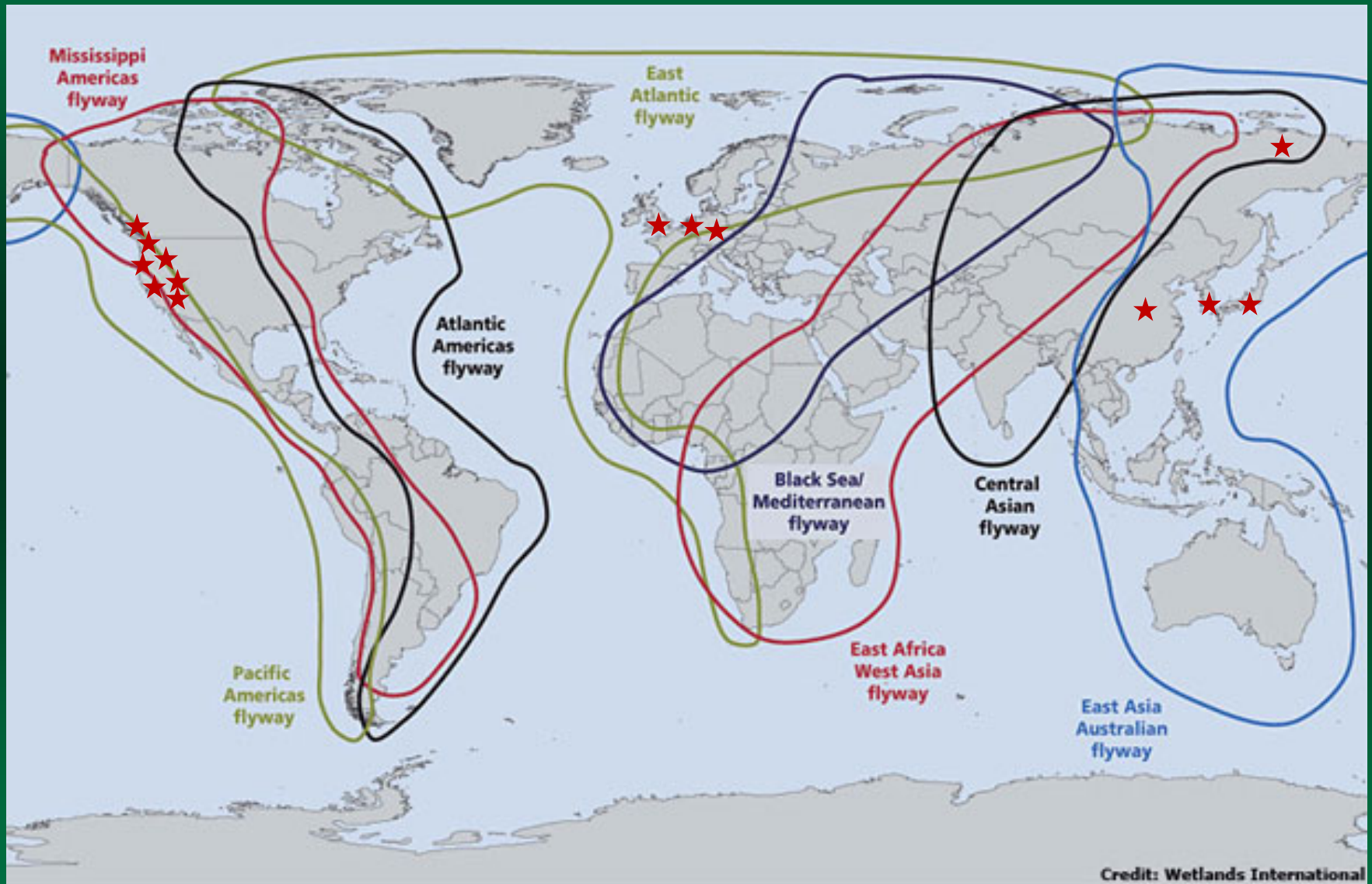
North American Flyways



North American Flyways

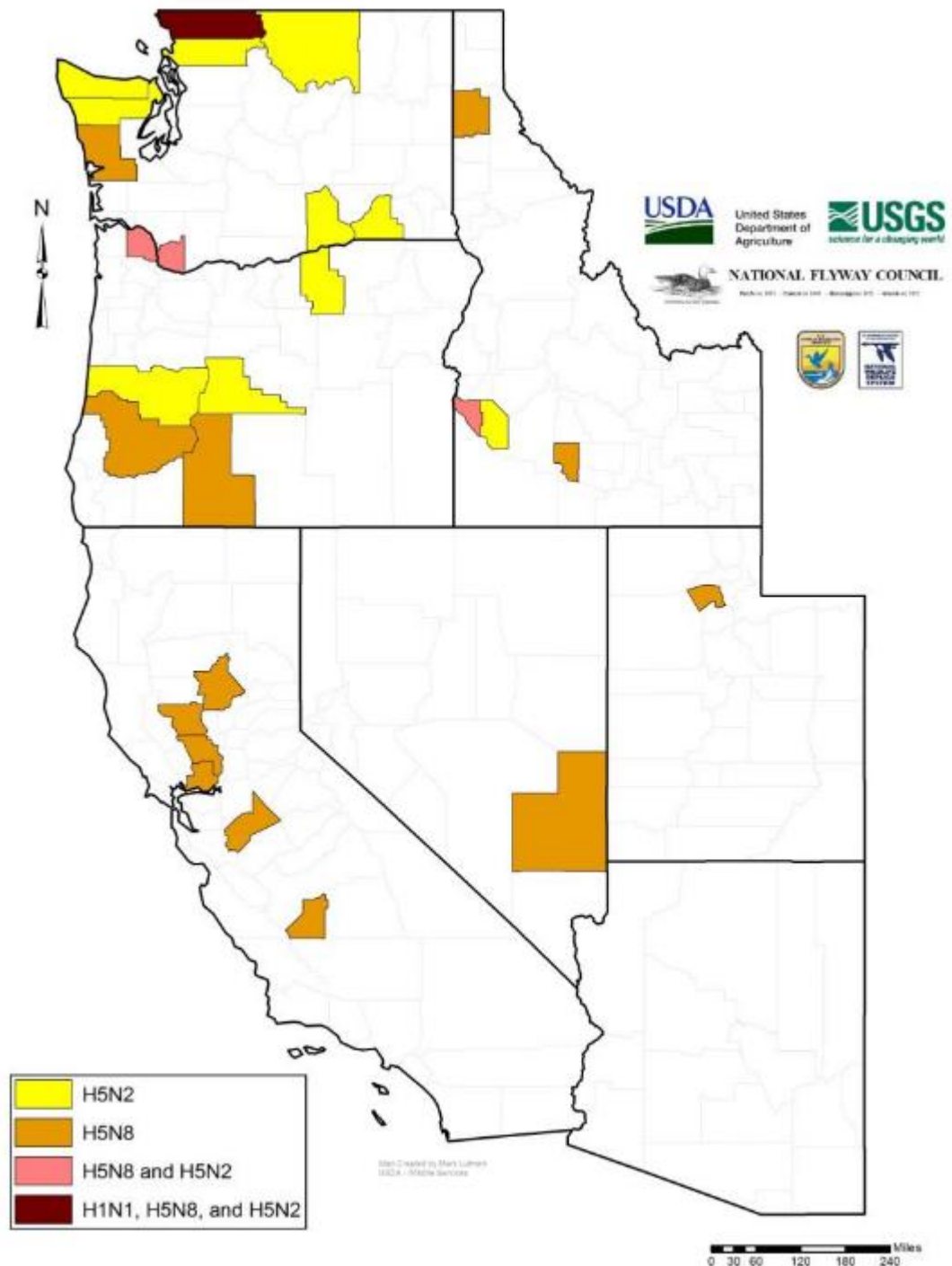


Global Spread of Eurasian H5



Pacific Flyway

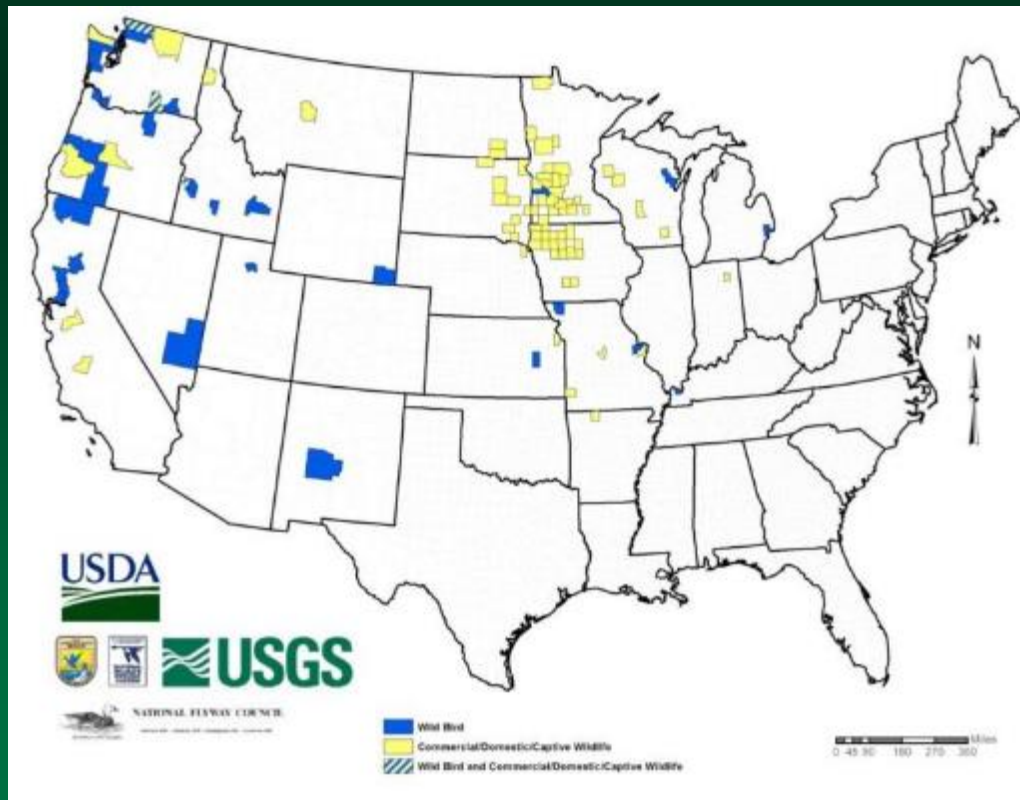
- 3 HPAI viruses detected
 - Eurasian H5N8
 - Mix origin H5N2 and H5N1
- All three HPAI viruses
 - Whatcom Co, WA
- H5N8 & H5N2
 - Washington, Idaho, Oregon
- H5N8
 - Throughout the flyway



Central and Mississippi Flyway

March-June 2015

- Wild Birds
 - 20 sick/dead geese and raptors
 - 3 apparently healthy waterfowl
 - Caveat: Little apparently healthy duck surveillance



Current Status

■ Wildlife

- Dabbling Ducks are primary reservoir
 - Exhibit little to no signs
- Unidentified number of raptors affected
- Canada Geese
 - Primarily die from infection
 - Goslings acutely sensitive
 - Good morbidity/mortality sentinel



Current Status

- **Wildlife**

- **Other wildlife**

- First identified case in a wild passerine in MN
 - PCR lung tissue positive, no virus isolated
 - No virus isolated from peridomestic species in IA
 - Including: Passerines and Small mammals
 - Exposure (antibody positive): 5 passerines
 - One PCR positive

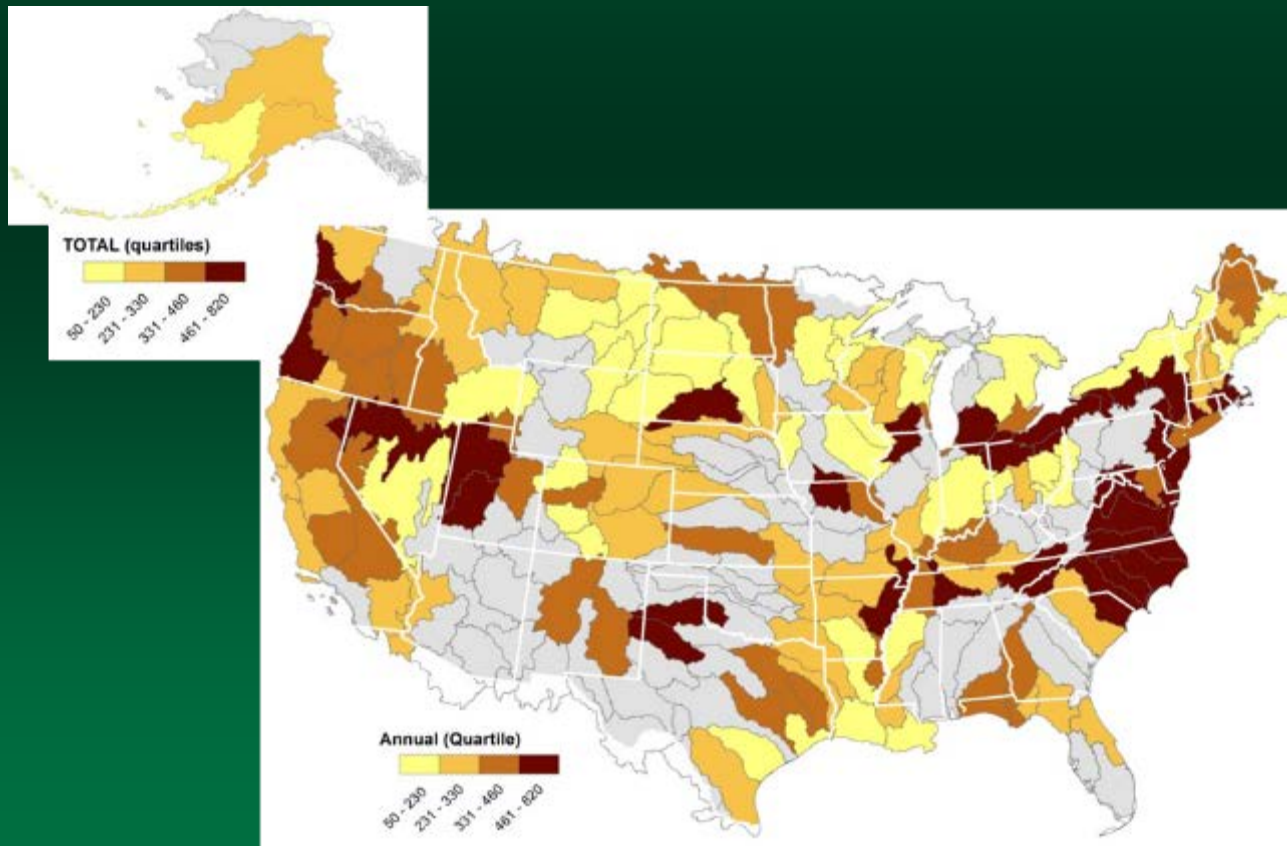


Current Surveillance

- Identify distribution across U.S.
- Detect early spread into new flyways/regions
- Provide flexible surveillance framework that can monitor wild waterfowl populations for
 - re-assortments of influenzas
 - introductions of new viruses
 - estimate prevalence of important influenzas once detected in an area of concern

Current Surveillance

- Based on:
 - What we know of wild duck movements
 - What we learned from previous AI surveillance



Current Surveillance

- **Sampling**

- **Passive (morbidity/mortality)**

- Year round
 - All Species



- **Active (apparently healthy birds)**

- Dabbling ducks
 - In post nesting season (summer)
 - Fall/Winter Migration Season



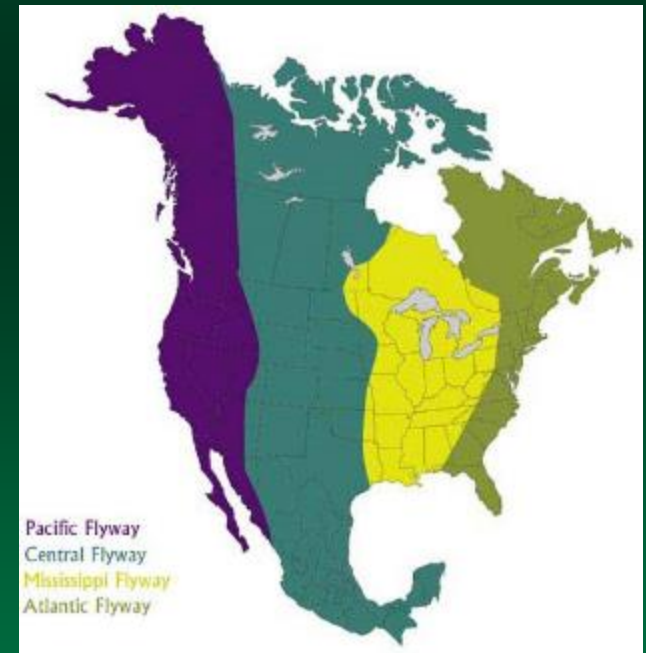
- **Environmental Fecal**

- Targeted year round



Current Status

- Since 1 July 2015:
 - 45,526 wild dabbling ducks sampled
 - Atlantic Flyway: 10,663
 - Mississippi Flyway: 13,783
 - Central Flyway: 9,202
 - Pacific Flyway: 11,854
 - American Oceania: 24
 - Only 2 PCR positives
 - Mallards
 - Great Salt Lake, UT
 - Oregon



Acknowledgements

- Wild Bird HPAI Interagency Steering Committee
 - USGS
 - USFWS
 - CDC
 - State Departments of Natural Resources
 - APHIS
- USDA/APHIS/NVSL
- NAHLN
- USDA/ARS/SEPRL

