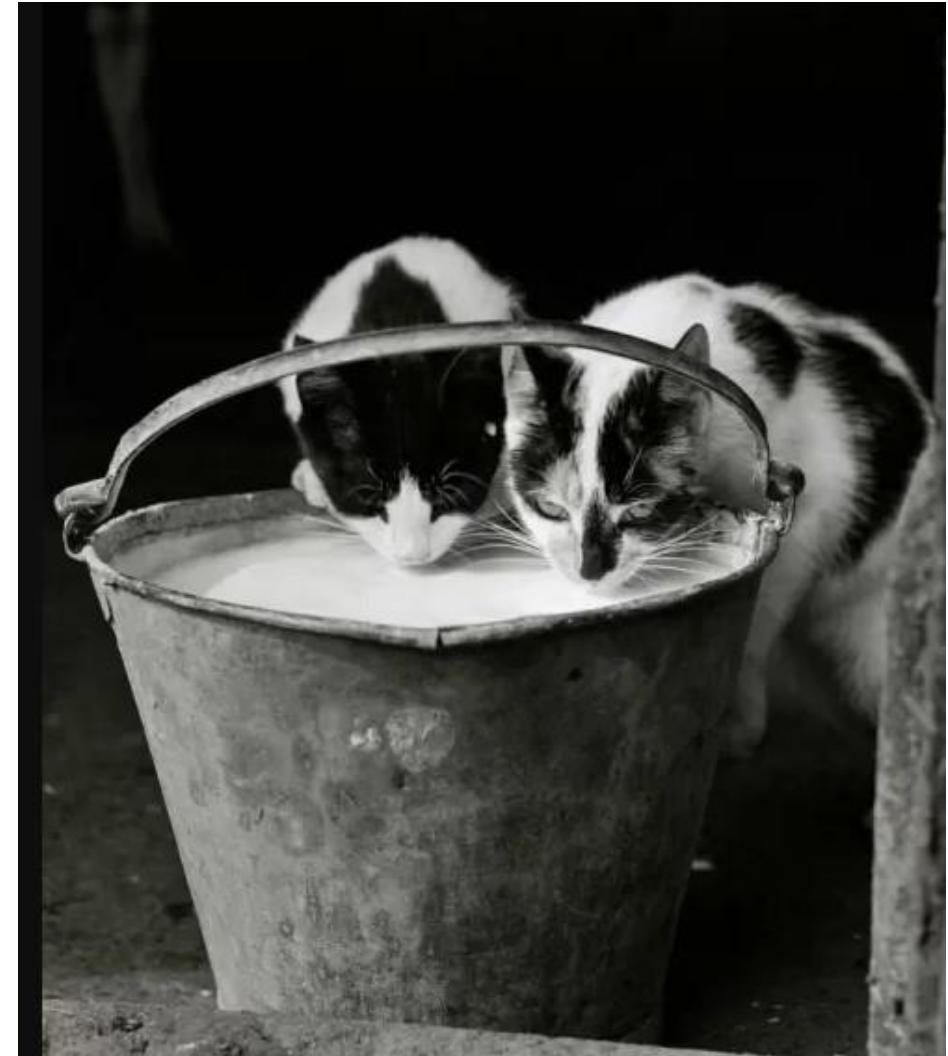


Chickens, Cows, and Cats: A Barnyard Story about Bird Flu

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<https://www.gettyimages.com/detail/news-photo/two-cats-drinking-milk-from-a-pail-1946-1980-artist-john-news-photo/918905036>

What is bird flu?

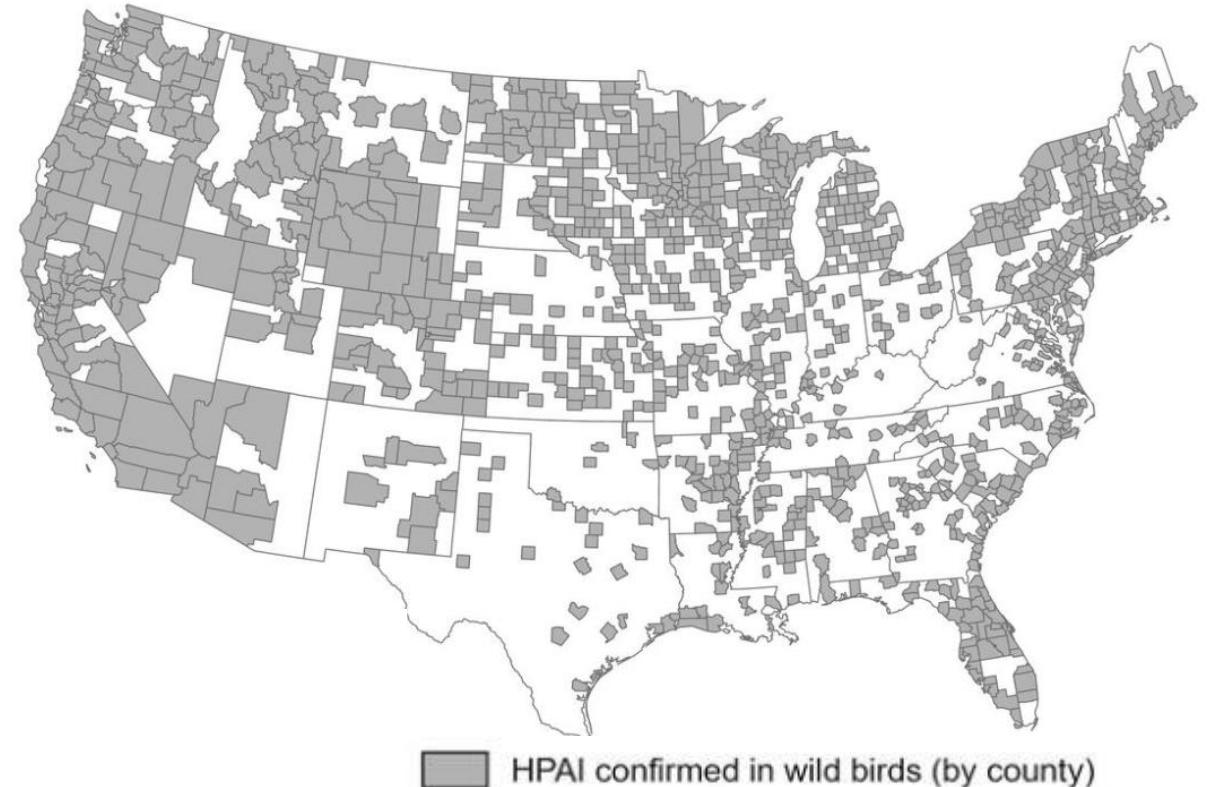
- Bird flu = H5N1 avian influenza virus
- Natural hosts = wild birds, ducks/geese, poultry
- Highly pathogenic in natural hosts (HPAI)
- First discovered in 1996 in geese in China
- H5N1 avian flu infection of birds/poultry around the world for 29 years



<https://fox11online.com/newsletter-daily/howard-officials-report-bird-flu-resurgence-after-dozens-of-dead-geese-found-in-quarry-duck-creek-quarry-avian-flu-wisconsin-dnr>

H5N1 avian flu in the US

- **2021:** emergence of H5N1 clade 2.3.4.4b HPAI in Europe with spread to North America via migratory birds
- **2022:** H5N1-infected wild birds and ducks/geese in all 50 states in the US



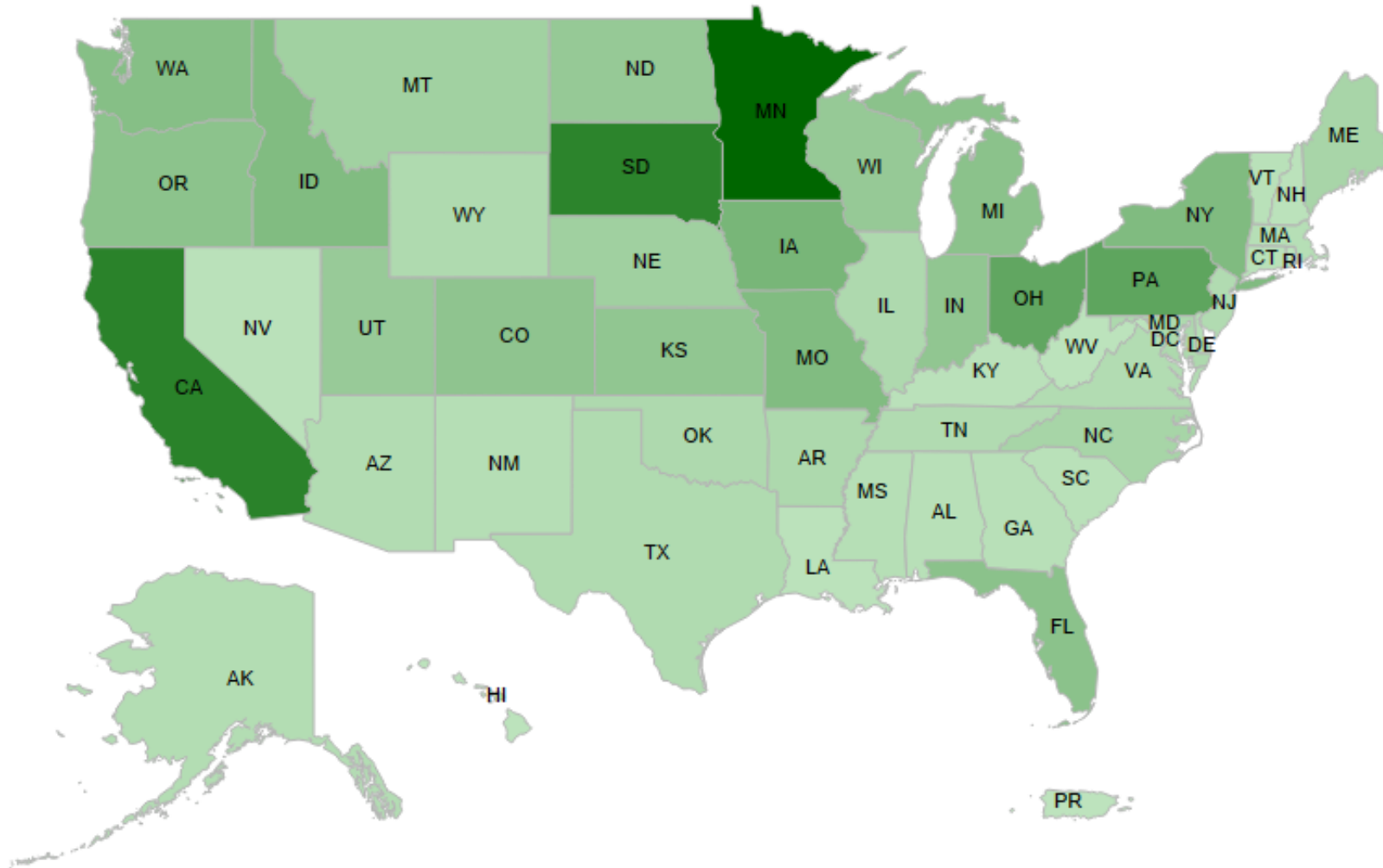
All data sourced from USDA/APHIS/Wildlife Services

National Wildlife Health Center
Madison, Wisconsin
Updated February, 2025



H5N1 avian flu infections in poultry 2022 to present

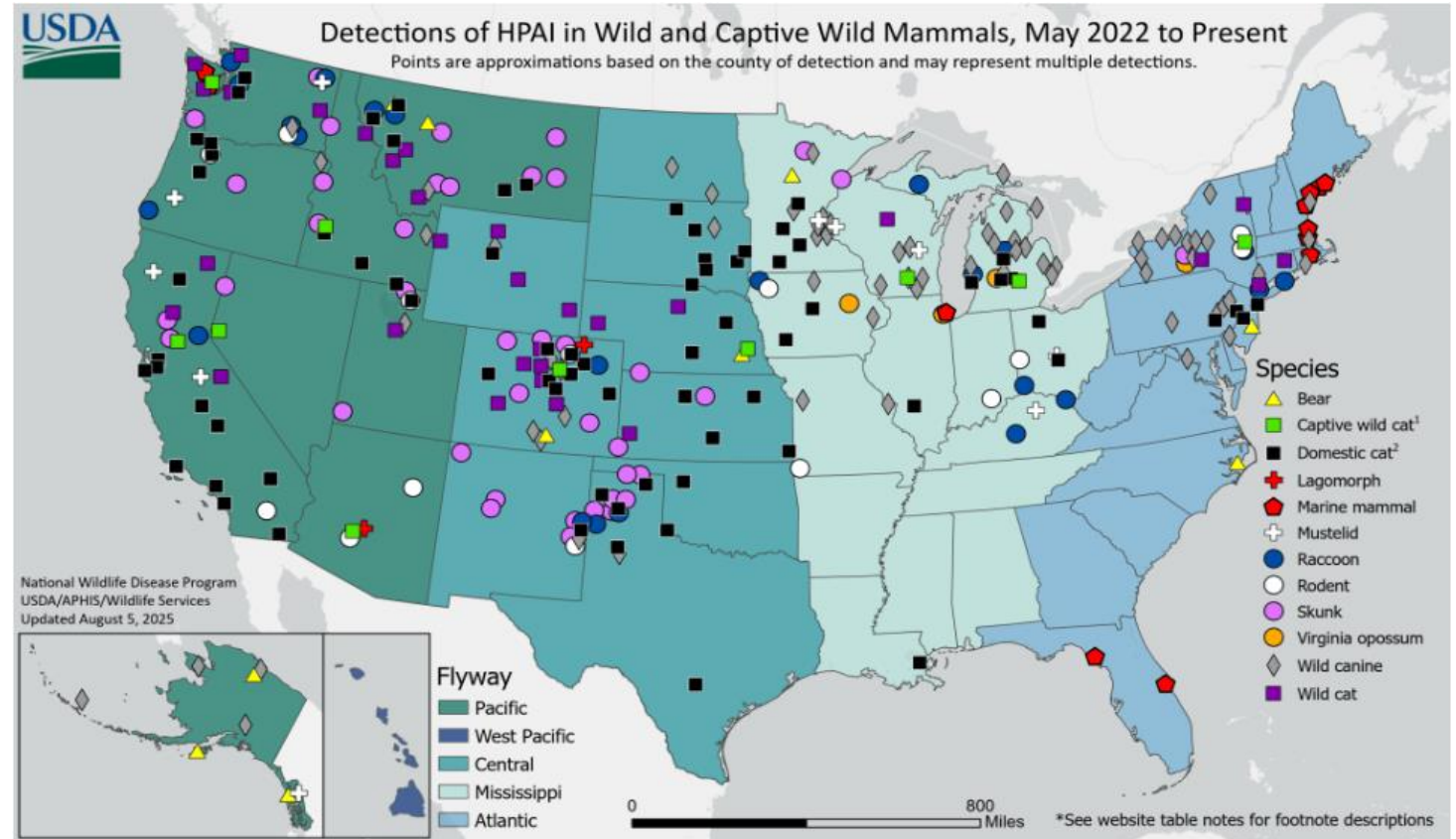
<https://www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza/hpai-detections/commercial-backyard-flocks>



- 174.8 million birds
- 1,711 commercial and backyard flocks
- 50 states
- Depopulation of 170 million birds

H5N1 avian flu spillover to mammals

- Reassortment of H5N1 clade 2.3.4.4b viruses created genotypes capable of infecting mammals
- New genotypes bind to α -2,3 sialic acid receptors on avian host cells and α -2,6 sialic acid receptors on mammalian host cells
- Infection of 200 terrestrial and marine mammalian species (rodents, racoons, foxes, coyotes, seals, sea lions)



<https://www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza/hpai-detections/mammals>

H5N1 avian flu infection of dairy cows

- **March 2024:** H5N1 infection of dairy cattle in the U.S.

- Reassortment of H5N1 clade 2.3.4.4b viruses to create genotype B3.13
- 1st detected in TX, KS, AZ farms
- Ingestion of feed contaminated by feces from infected wild birds?

- **Early 2025:** emergence of genotype D1.1 in dairy farms in NV and AZ

- Different N1 gene sequence than other H5N1 clade 2.3.4.4b genotypes
- Genotype D1.1 also in wild birds and poultry



<https://www.nature.com/articles/d41586-024-01221-2>

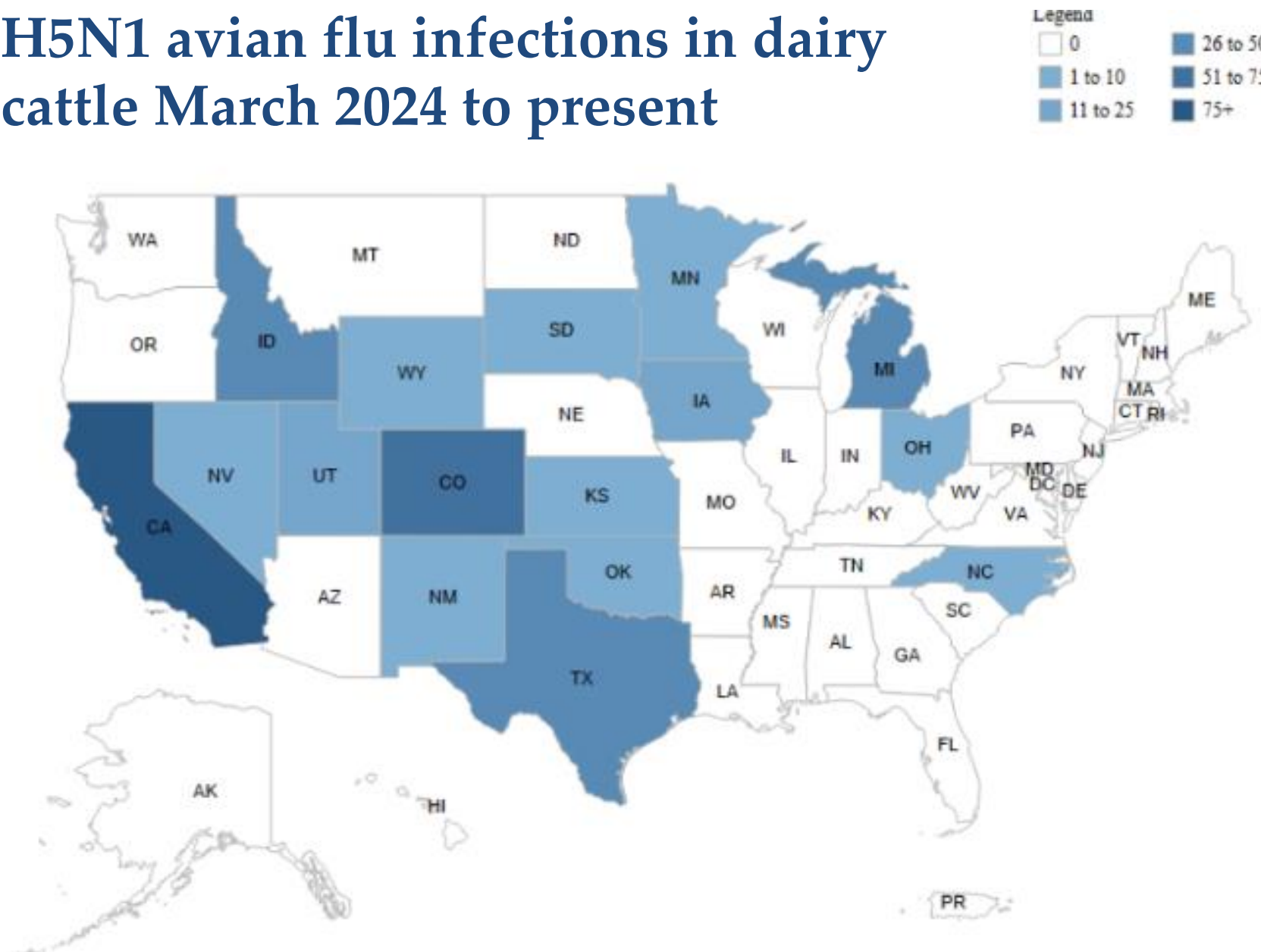
H5N1 avian flu infection of dairy cows

- Localized viral infection of the mammary gland
 - Mastitis
 - Sudden drop in milk production
 - High viral loads in milk
- Virus spread by movement of infected cows between farms
 - Contamination of milking equipment
 - Direct contact with milk from infected cows
- Airborne transmission of aerosolized virus during milking
- Infectious virus in runoff water used to clean milking parlors and equipment



<https://www.midwesternbioag.com/baileys-bit-about-nutrition-19/>

H5N1 avian flu infections in dairy cattle March 2024 to present



- 1,078 farms
- 17 states
- H5N1 genotype B3.13 infections in dairy workers and dairy veterinarians

Can cats catch bird flu?

- 2004/2006 – confirmed cases of H5N1 flu in cats in Asia and Europe
 - Associated with local circulation of H5N1 in wild birds and poultry
 - Infections acquired from ingestion of infected birds and poultry
 - High mortality due to neurological disease
- 2007/2021 – no reports of H5N1-infected cats
- 2022/2023 – H5N1 clade 2.3.4.4b infections in cats Europe
 - Cats living on farms with infected birds/poultry or fed raw infected poultry



<https://www.abc.net.au/news/2004-02-20/two-thai-cats-die-of-bird-flu/139172>

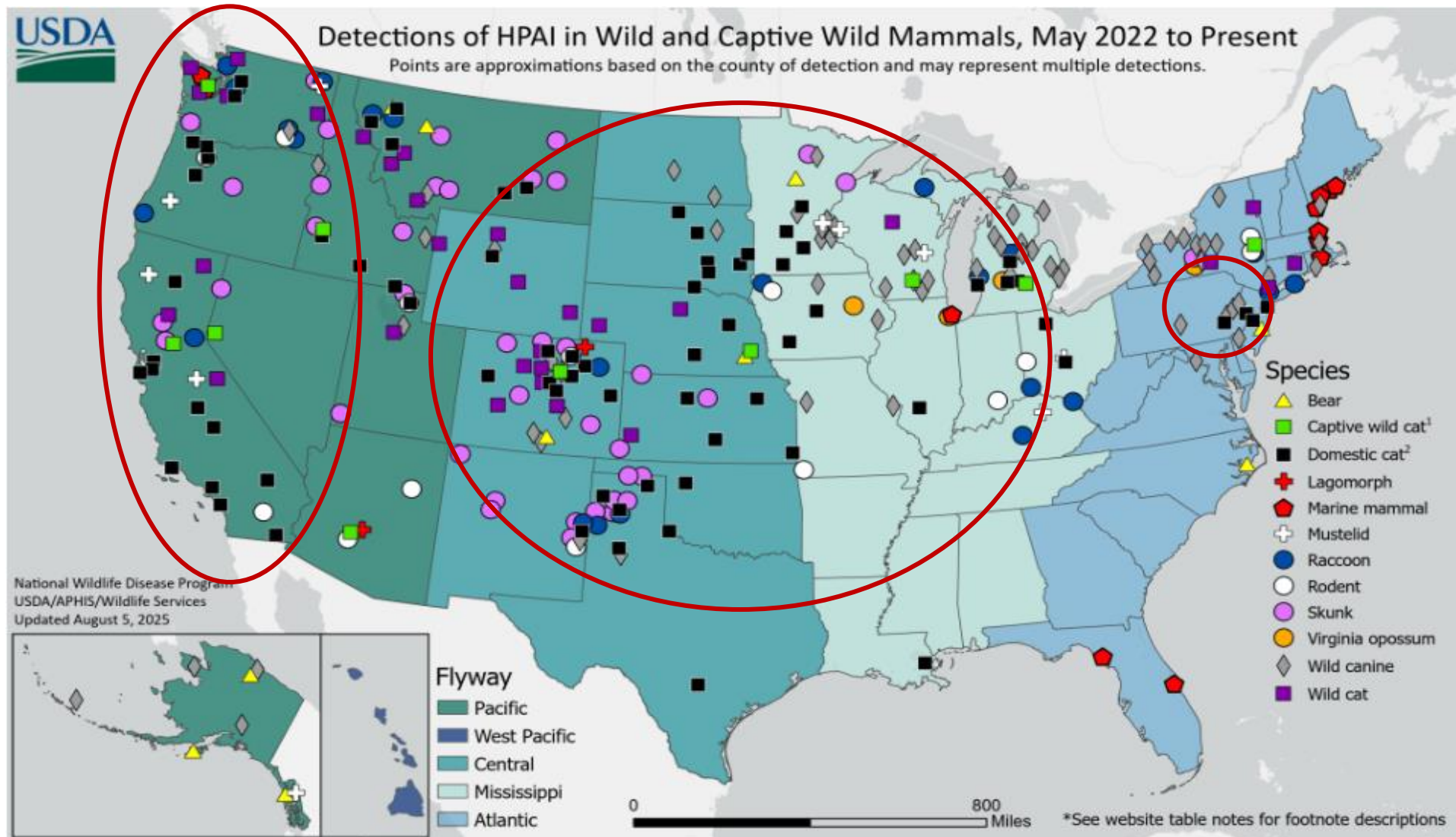
H5N1 avian flu spillover to cats in the U.S.

- **March 2024:** cat die-off on a TX dairy farm where H5N1 infection first detected in dairy cattle
 - Barn cats fed milk from infected sick cows
 - >50% of the cats died within 2 days
 - Systemic infection with severe meningoencephalitis, pneumonia, myocarditis
 - H5N1 flu virus in brain, lungs, heart
 - Whole genome sequencing confirmed H5N1 clade 2.3.4.4b in cow milk and the cats
- First report of H5N1 avian flu virus transmission via ingestion of raw milk: new route for mammal-to-mammal transmission



<https://www.dailymail.co.uk/sciencetech/article-13366941/bird-flu-symptoms-cats-blind-raw-milk-texas.html>

H5N1 avian flu spillover in cats in the U.S.



- 137 cats with confirmed infection
- 23 states
- 50-70% mortality

What cats are at risk for bird flu?

- Cats with outdoor access in locations where H5N1 flu virus is infecting birds and mammals
- Cats living on dairy farms, poultry farms, or with backyard flocks
- Exposure to dairy or poultry farmworkers and their clothing

https://www.reddit.com/r/homestead/comments/15z6x1z/barn_cat_question/



<https://www.flickr.com/photos/21652620@N08/4347479850>



What cats are at risk for bird flu?

- Cats with access to mice and dead birds in geographic locations where H5N1 flu virus is infecting birds and mammals



<https://www.npr.org/2013/01/29/170588511/>
Photograph: Vasily Vishnevskiy/Alamy



<https://www.cidrap.umn.edu/avian-influenza-bird-flu/usda-reports-more-h5n1-detections-mice-and-cats>

What cats are at risk for bird flu?

- Consumption of unpasteurized dairy products, raw poultry-based pet food, undercooked poultry
 - Local manufacturers in geographic “hot spots” for H5N1-infected cows and poultry



<https://www.facebook.com/photo/?fbid=557199813095845&set=d41d8cd9>

What are the symptoms in infected cats?

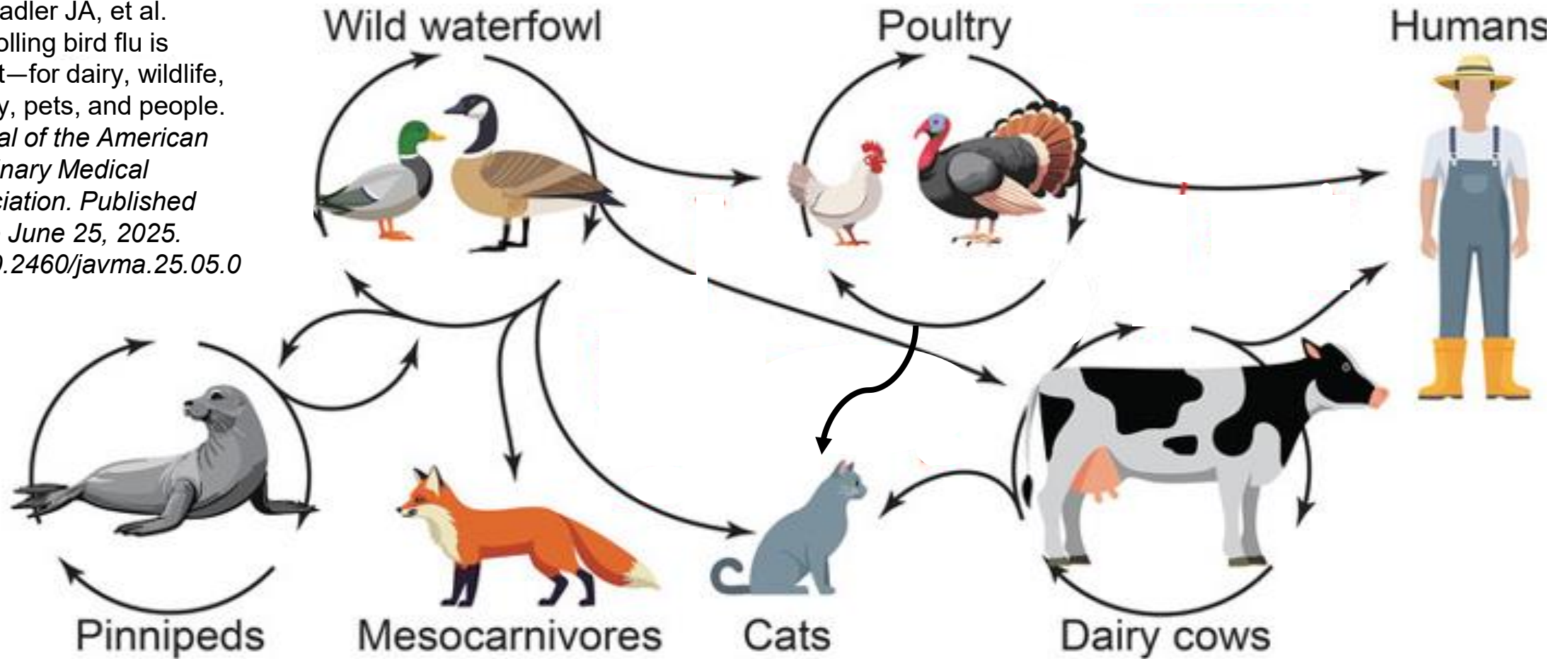
- Severe neurological disease that mimics rabies
 - Disorientation
 - Blind
 - Circling
 - Wobbly gait
 - Paralysis
 - Seizures
- Severe respiratory disease
 - Copious nasal discharge, cough, open-mouth breathing
 - Struggling to breathe/rapid breathing due to pneumonia
- Median time from illness onset to death = 2 days (1-10 days)
- Severe meningoencephalitis, pneumonia with edema, myocarditis

Can cows and cats spread H5N1 infection?

- Cows shed virus in milk
 - Cow-to-cow transmission by contact with contaminated milk, contaminated milking equipment, virus aerosolization during milking, contaminated runoff water
 - Documented cases of cow-to-human transmission
- Cats shed virus in urine and respiratory secretions
 - No evidence of cat-to-cat transmission
 - No evidence for cat-to-human transmission
 - Are cats dead-end hosts?

H5N1 avian flu ecology 2025

Lowen AC, Bowman AS, Runstadler JA, et al. Controlling bird flu is urgent—for dairy, wildlife, poultry, pets, and people. *Journal of the American Veterinary Medical Association*. Published online June 25, 2025. doi:10.2460/javma.25.05.0294



Public health concerns for cows and cats

- Can cows and cats serve as incubators for evolution of more pathogenic virus genotypes with spillover to people?
 - Replication of H5N1 .3.4.4b genotypes in diverse avian and mammalian hosts
 - Frequent reassortments to form new genotypes (B3.13 and D1.1)
 - Virus binding to both avian and mammalian receptors
 - Close contact with people
- Ongoing surveillance with H5N1 testing and sequencing to identify new genotypes with novel transmission routes
 - Who performs surveillance?
 - Who bears the costs of surveillance?
- H5N1 vaccination of cows and cats?

Current measures

- Veterinarians are on the front lines for identifying infections and communicating with public health and farmers/pet owners
- Dairy cows
 - Increase testing of cows and workers
 - Regulate movement of cows and equipment between farms
 - Shower/change clothes and wash hands before leaving the farm
- Cats
 - Preferably keep indoors or an enclosed outdoor facility
 - Reduce potential contact with birds, rodents, poultry, and cows
 - Do not feed raw milk or raw poultry diets

Select references

- Sykes JE. Companion animals and H5N1 highly pathogenic avian influenza: cause for concern? doi.org/10.2460/javma.25.06.0388. Published 8/8/25
- Coleman KK and Bemis IG. Avian Influenza Virus Infections in Felines: A Systematic Review of Two Decades of Literature. Open Forum Infect Dis. 2025;12(5):ofaf261. doi:10.1093/ofid/ofaf261
- Burrough ER, et al. Highly pathogenic avian influenza A(H5N1) clade 2.3.4.4b virus infection in domestic dairy cattle and cats, United States, 2024. Emerg Infect Dis. 2024;30(7):1335–1343. doi:10.3201/eid3007.240508
- Campbell et al. Surveillance on California dairy farms reveals multiple sources of H5N1. bioRxiv preprint doi: <https://doi.org/10.1101/2025.07.31.666798>; August 1, 2025
- AVMA. Avian influenza A (H5N1) in cats. <https://www.avma.org/resources-tools/animal-health-and-welfare/animal-health/avian-influenza/avian-influenza-h5n1-cats>
- APHIS/USDA. Detections of Highly Pathogenic Avian Influenza in Mammals. <https://www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza/hpai-detections/mammals>
- CDC. What Causes Bird Flu in Pets and Other Animals. <https://www.cdc.gov/bird-flu/virus-transmission/avian-in-other-animals.html>
- CDC. Considerations for Veterinarians: Evaluating and Handling of Cats Potentially Exposed to Highly Pathogenic Avian Influenza A(H5N1) Virus. <https://www.cdc.gov/bird-flu/hcp/animals/index.html>