

Avian influenza's deadly effect on agriculture

2014

Jan. 17 — Highly pathogenic H5N8 bird flu detected in South Korea among breeding ducks. Eventually, there are 29 outbreaks and 12 million birds are culled to contain the virus.

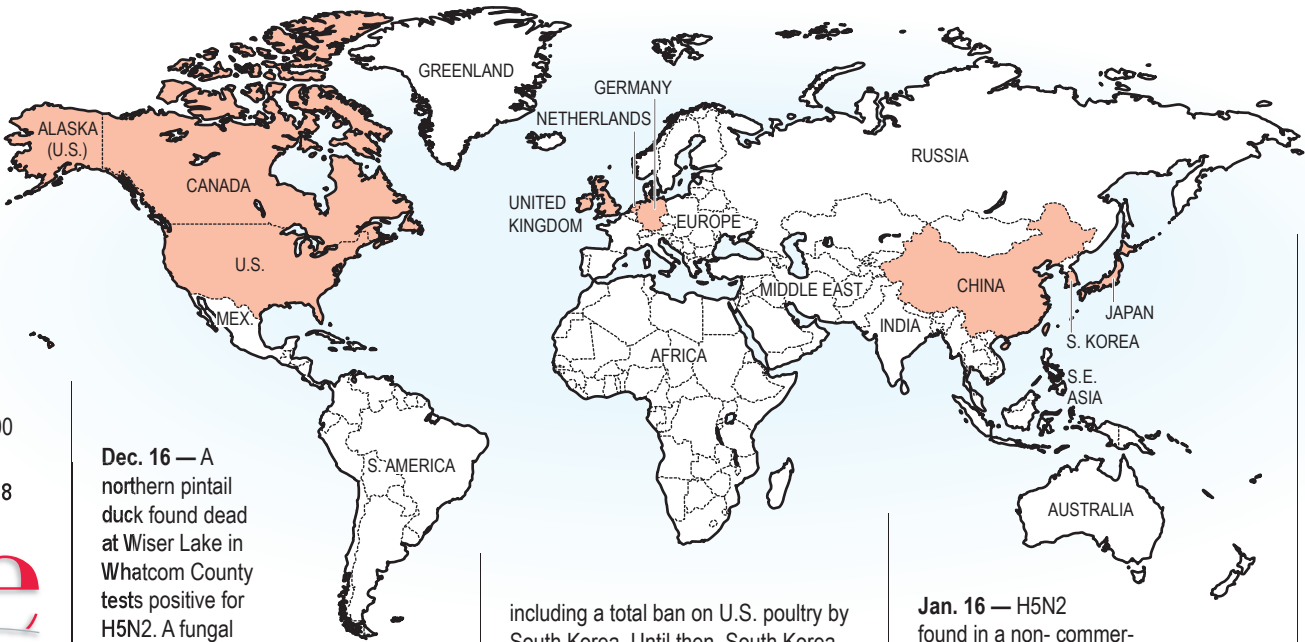
April 13 — Japan reports H5N8 outbreak; 112,000 birds are destroyed to contain virus.

September — New South Korean H5N8 case breaks out among ducks reared for meat; 1,200 ducks die and 19,800 are culled.

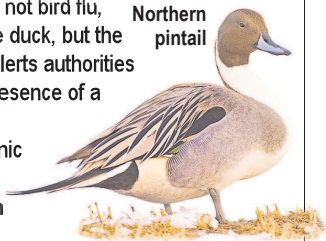
October — China reports two H5N8 outbreaks.

Nov. 4 — H5N8 appears in Europe on a turkey farm in Germany. Other cases appear in the Netherlands and United Kingdom by mid-month. The World Organization for Animal Health reports migratory birds are likely spreading the H5N8 virus and it's related to the H5N1 strain that has killed more than 400 people in the past decade. The organization sees a low risk to human health, but recommends "extreme vigilance" to keep the virus from infecting poultry.

Dec. 1-19 — H5N2 bird flu strikes eight chicken farms, three turkey farms and one backyard flock of ducks, chickens, geese and turkeys in British Columbia, Canada, near the Washington border; 245,600 birds die or are destroyed.



Dec. 16 — A northern pintail duck found dead at Wiser Lake in Whatcom County tests positive for H5N2. A fungal disease, not bird flu, killed the duck, but the finding alerts authorities to the presence of a highly pathogenic strain of Eurasian bird flu in the United States. Over the next month, bird flu is detected in wild birds in Oregon, Idaho, California and Utah.



including a total ban on U.S. poultry by South Korea. Until then, South Korea had been importing \$8.7 million worth of U.S. poultry each month.

2015

Jan. 3 — H5N2 strikes a non-commercial flock in Benton County in south-central Washington.

Jan. 9 — H5N2 confirmed in a second Benton County backyard flock.

Jan. 9 — China bans U.S. poultry, the most significant trade fallout yet from bird flu. The U.S. exported \$354 million worth of poultry products to China in 2013, about 7 percent of total poultry exports.

Jan. 16 — H5N2 found in a non-commercial flock in Clallam County on the Olympic Peninsula in Washington.

Jan. 16 — Bird flu spreads to Idaho, as a backyard flock in Canyon County, near the Oregon border, tests positive for H5N2.

Jan. 16 — A third bird flu strain confirmed in Washington. A green winged-teal duck shot by a hunter near Sumas in Whatcom County had a H5N1 virus that was a mix of highly pathogenic Eurasian and low pathogenic North American strains. Health officials say the new virus is different than the H5N1 virus linked to more than 400 deaths in the past decade, but it shows bird flu viruses

alter as they circulate among wild birds.

Jan. 23 — Foster Farms finds H5N8 bird flu on a turkey farm in Stanislaus County in California's Central Valley. It's the first commercial operation to be infected.

Jan. 29 — Avian flu confirmed in 5,000 game bird flock in Okanogan County in north-central Washington. On the same day, USDA confirms a Cooper's hawk collected in Whatcom County had bird flu. It's the first documented case of the virus in a wild raptor. Several more cases follow.

Jan. 30 — The Nevada Department of Agriculture announces a mallard duck collected in southern Nevada tested positive. It's the state's first case.

Feb. 2 — USDA finds several wild ducks collected in Oregon in Morrow, Columbia and Lane counties in early January had bird flu.

Feb. 3 — Another Washington backyard flock infected. This one is in Okanogan County.



Sources: USDA; World Organization for Animal Health; Washington Dept. of Agriculture; Washington Dept. of Fish and Wildlife; Oregon Dept. of Agriculture; Census Bureau; Centers for Disease Control and Prevention

Don Jenkins and Alan Kenagal/Capital Press

‘There’s a lot of concern about what’s going to happen next’

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So the Washington state flock with the single dead goose was euthanized, with the federal government compensating the owner for her loss.

Washington State Veterinarian Joe Baker said the experience demonstrated that containing bird flu will require vigilance.

“It’s kind of dangerous to say, ‘It’s just one dead bird. It’s not important,’” he said.

New viruses

Until mid-December, highly pathogenic bird flu had never been detected in the U.S. West. Since then, migratory ducks, native raptors, backyard flocks and commercial poultry have been infected in six Western states and British Columbia, Canada.

They are all part of an overlapping web of viruses spread across the Northern Hemisphere by migratory birds. Animal health officials had long talked about the possibility of a virulent Eurasian bird flu strain spreading to North America. This year it happened, posing a threat to the \$4 billion-a-year Canadian poultry industry and the \$44 billion U.S. poultry industry.

Plus, this particular Eurasian virus, an H5N8 strain that appeared 13 months ago in South Korea, is mixing with North American viruses to create new H5N2 and H5N1 strains. So far, Washington is the only state where all three have been confirmed. Canada has had the Eurasian-North American H5N2 and H5N1, but not the H5N8.

It was the discovery of H5N1 in a green-winged teal duck that Baker described as “scary.”

H5N1 viruses have killed more than 400 people in the past decade, according to the World Health Organization.

Further tests, however, showed the version of the virus that showed up in Washington state virus was genetically different from the one that has been deadly to humans in Asia and Africa.

Changing viruses

The letters “H” and “N” stand for two proteins — hemagglutinin (HA) and neuraminidase (NA). There are 16 HA and nine NA subtypes, making many combinations possible. Some combinations are known to infect birds, while other combinations infect people. Gene sequencing is used to identify the virus.

Despite its name, the H5N1 found in Washington is more closely related to the Eurasian H5N8 and Eurasian-North American H5N2 strains, which have not been known to infect people.

The virus’ appearance,



Don Jenkins/Capital Press

Washington State Veterinarian Joe Baker, shown here in his office in Olympia, foresees highly pathogenic avian influenza circulating in the region for at least a couple more years.

however, illustrated that the disease is constantly being reshaped in the wild.

“The thing about avian influenza viruses is that the only thing predictable about them is they will change,” Washington Department of Fish and Wildlife veterinarian Kristin Mansfield said.

In January 2014, the H5N8 virus struck a South Korean duck farm. The virus spread to 29 farms, and more than 600,000 birds were culled to contain it, according to the Organization for Animal Health.

The same H5N8 virus then surfaced elsewhere in Asia, then Europe in November and finally North America in December. Various highly pathogenic bird flu viruses also have been reported this winter in Africa and the Middle East.

Bird flu poses a well-known threat to chickens and turkeys. But the disease is fatal to many wild bird species as well. A pelican found dead in late January was the first avian flu victim in Bulgaria.

Meanwhile, dozens of species of migrating birds, immune to the disease, carry the virus in their bowels. Backyard flocks raised outdoors along migratory routes are especially vulnerable. Avian flu outbreaks have also been traced to live bird markets in developing countries. But the virus in the past three months has penetrated commercial poultry farms in several European countries, Canada and California.

The outbreaks have caused trade restrictions, including disrupting the flow of breed-

ing stock, which could affect future poultry and food supplies, warned USA Poultry and Egg Export Council President Jim Sumner.

“It’s a growing world problem,” he said. “There’s a lot of talk, a lot of concern about what’s going to happen next.”

New strains appear

Bird flu has been around a long time. An Italian scientist, Edoardo Perroncito, is credited with being the first to describe a highly contagious disease lethal to poultry. In 1878, he called it “fowl plague.” In 1955, researchers discovered the disease was a type A influenza.

Avian influenza threatens trade, food supplies and, in rare cases, human health, according to the Centers for Disease Control and Prevention.

The Pacific Flyway, the route traveled by virus-carrying waterfowl, extends from Alaska to the tip of South America. The USDA has not yet reported any bird flu findings south of southern Nevada. No Latin American country has reported finding highly pathogenic bird flu to the World Organization for Animal Health, which is also known by the initials OIE, from the French translation of the agency’s name.

Those birds will retrace their movements in the spring. How long the virus will linger in the West nobody knows, Baker said.

“That’s something we can only guess at,” he said. “I don’t think anyone can predict the path this will follow.”

It’s unclear how many migrating birds are spreading the virus. Federal and state officials have tested hundreds of dead wild birds since December. So far, the USDA has confirmed finding the virus in 25 of them. The sampling is hardly scientific.

“We don’t know the prevalence in wild species,” Baker said.

In 2003, a World Organization for Animal Health panel warned that poultry raised outdoors along migratory routes was at risk. But bird flu first struck Europe at indoor poultry operations.

The first H5N8 case was confirmed Nov. 4 at a commercial turkey farm in Germany. More outbreaks were soon reported at commercial farms in the Netherlands and the United Kingdom.

There are no known direct migratory flyways between Europe and Southeast Asia, where H5N8 originated. The European Food Safety Authority has speculated that it’s most plausible the infection was introduced into farms from contaminated farm equipment.

Foster Farms, which had \$2.2 billion in sales in 2013, says it tightened security at turkey farms in Central California after avian influenza was detected in the Pacific Flyway late last year. Nevertheless, the virus in late January infected a turkey barn in Stanislaus County. Some 145,000 birds were destroyed as officials moved to stop its spread.

Foster Farms referred questions about how the out-

break occurred to the USDA’s Animal and Plant Health Inspection Service. Agency spokeswoman Joelle Hayden said the investigation is still ongoing.

Canadian authorities have provided little insight into how bird flu spread through 11 British Columbia poultry farms between Dec. 1 and 17. Some 245,600 chickens and turkeys have since been destroyed.

“A definitive source has not been confirmed but wild migratory birds are a known reservoir of avian influenza virus. There is a significant wild bird population in the Fraser Valley and it is a known flyway for migrating birds,” Canadian Food Inspection Agency spokeswoman Tammy Jarbeau wrote in an email.

Markets close

The stakes are high for the U.S. poultry industry. Exports account for about one-fifth of the industry’s business, according to Sumner.

With every new bird flu case, authorities inevitably stress avian influenza is not a risk to human health or food safety. Properly cooked, poultry is safe, they say.

Still, countries, including the United States, routinely react by banning poultry imports from infected areas. Most countries have limited their bans to poultry from Washington, Oregon, Idaho and California, where domestic flocks have been infected. None of those states are major poultry exporters.

The bigger worry for the U.S. poultry industry is that

China and South Korea, major customers, have banned all U.S. poultry imports. South Korea has a policy of banning poultry imports for at least six months after an outbreak. Each new U.S. case resets the clock.

The USDA has criticized the bans as too broad and not based on “good science.” Sumner said bird flu is being used as excuse by China to address its surplus of domestic poultry.

U.S. consumers eat all the chicken wings and breasts raised here. But foreign countries are markets for poultry parts that aren’t popular with American consumers.

In China, chicken feet are a crunchy delicacy. Poultry producers can sell “paws” to China for 90 cents a pound, Sumner said. With the ban in place, the feet might fetch two or three pennies a pound for use as pet food or fertilizer, he said.

The good news for the poultry industry is that so far bird flu hasn’t led to concerns about domestic consumption. Sumner said “hysteria” associated with past animal diseases has been absent.

“We have had absolutely zero public concerns about avian influenza these days, which is great because there needs to be zero public concern,” Sumner said.

‘Continuing pattern’

Baker said he suspects that based on prior outbreaks elsewhere, highly pathogenic bird flu will be a problem in the West for at least a couple more years.

“We have to assume there’s going to be a continuing pattern,” he said. “I think we’ll continue to see it in isolated flocks.”

The challenge will be containing the virus, which is a time-consuming job for state and federal officials.

Baker said backyard flock owners need to do their part. A couple dozen dead guinea fowl in Oregon in mid-December touched off a wave of trade sanctions.

“A backyard flock, a tiny cluster of chickens, can have a profound impact on the poultry industry,” he said.

Steps as simple as covering outdoor cages with a tarp, disinfecting surfaces with bleach and having shoes and clothes set aside for working around the flock can help, he said. “These are inexpensive measures.”

The virus has proven impossible to shut out entirely. Foster Farms issued a statement after the outbreak in California saying the company “has long employed strict and industry leading biosecurity practices.”

But, Baker said, “Biosecurity measures are not absolute.”