

As bird flu spreads to dairy cows, Minnesota's raptors show signs of building remarkable immunity

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A little barred owl looked up from the crux of Dana Franzen-Klein's elbow, stared the veterinarian in the eye and, in as tough and menacing

of a posture as he could muster, clicked his beak. The injured bird was a baby, maybe a month old. His click was a warning, that despite being a puffball barely bigger than Franzen-Klein's palm, he would bite the medical director of the Minnesota Raptor Center if he had to.

"You're not going to get me," Franzen-Klein said, as she checked the way the baby owl moved for a sign of where he was hurting.

"It's your leg," she said. "It's your right leg."

Then before Franzen-Klein could do anything else, before she could take an X-ray to see if the [broken bone](#) could be mended or if the owl had to be put down, she stuck a needle into his elbow at the base of his wing and took a [blood sample](#) to find out if he had built up or inherited any antibodies over the course of his short life to the dreaded avian flu.

The worst strain of bird flu to ever hit North America continues to spread. It's spilled over and infected far more types mammals than previously thought possible since first arriving to the continent in late 2021. This spring, for the first time, it infected dairy cows in nine states, including North Dakota and Michigan. The virus has been found in milk from those infected cows.

But, in a promising sign, blood samples from the Minnesota Raptor Center and other rehabilitation facilities across the United States show that high numbers of animals are building up immunity to the [deadly virus](#) in the woods, swamps and other wild places that harbor it.

For the last year and a half, Franzen-Klein and other veterinarians at the Raptor Center have been taking blood samples from each of the 1,000-plus injured and [sick birds](#) that come through their doors to test for the antibodies, for signs that the birds had, at some point, beaten the H5N1 strain of high pathogenic avian influenza. The results have been

overwhelmingly positive.

More than half of the hundreds of [bald eagles](#) treated at the center have gotten this strain of bird flu and recovered from it, said Victoria Hall, the center's executive director. High numbers of barred and great horned owls have, too, as well as red tailed hawks, peregrine falcons, and just about every other kind of bird the center treats.

And it's not just in Minnesota. Florida's black vultures, California's condors, cormarants and blue teal ducks that span the Mississippi Flyway from Ontario to the Gulf of Mexico are showing much higher than expected levels of antibodies and signs of recovery, said David Stallknecht, a professor emeritus at the University of Georgia who has been testing blood samples from rehabilitation centers across the country.

It's too early to say if the virus is actually waning in the wild, Stallknecht said. But the more immunity that wild birds build up, the less opportunity there will be for the virus to cause widespread deaths. And the fewer infected dead birds for scavengers to eat, the less opportunity the virus will have to keep infecting mammals.

"It is just an excellent sign," he said of the number of raptors that have antibodies. "Now we need to know what percentage of some of these species are dying and what percentage are surviving. We're not there yet, but we're getting there."

Some form of the virus, usually a less contagious strain, is almost always present in waterfowl. The bird flu evolved with ducks and geese and rarely harms them or spreads to other animals. But occasionally, a particularly contagious and damaging strain emerges.

The H5N1 strain hit the United States in 2022. It started spreading

between different populations of ducks and geese as they migrated, then infected the owls, hawks and eagles that ate them.

The virus is always most potent in the spring, when the cool and wet weather allows it to survive in feces and carcasses. Scavengers, or even the soles of shoes, take it to chicken coops and turkey farms. Once poultry is infected, all the birds on site usually need to be destroyed.

Across the country, more than 79 million farm birds have died from the virus since 2022, according to a federal database. According to a Star Tribune analysis, the federal government paid \$135 million for the losses to turkey and chicken farmers in Minnesota alone.

This strain has also killed untold thousands of wild birds.

Franzen-Klein was at the Raptor Center in the spring of 2022 when the virus wiped out entire families of barred owls, and veterinarians could do little but watch as more than 200 infected eagles, osprey and hawks that were brought to the center convulsed with seizures and died. It was wondered then if any raptors could recover from the virus or if it was nearly always fatal.

So little is still known about how the virus behaves in the wild.

"That's why we need to sample every bird we have, no matter what age, no matter what species," Franzen-Klein said. "We sample everyone to try to get a better idea of what is going on in these populations."

Some [young birds](#) seem to have inherited antibodies from their mothers.

The project is paid for with state lottery profits earmarked for Minnesota's environmental trust fund. Lawmakers recently approved another round of trust fund projects that will continue bird flu sampling

at the center for at least another year.

While the flu still spreads, cases have slowed drastically. So far this spring, Minnesota has seen only three bird flu outbreaks, all in backyard domestic flocks. Just one eagle has tested positive for it so far at the Raptor Center.

There have been no reports of the large die-offs of ducks, snow geese or other birds that happened often during the first year of the outbreak, according to state wildlife officials.

Franzen-Klein looked at the X-ray of the baby owl's leg, considering whether surgery could save his life. Broken bones in young birds pose a number of unique problems to rehabbers, but they can heal remarkably fast if a surgery is successful. A bone in the owl's right leg had been snapped in two, likely from a fall.

"It's not easy," she said. "It's not easy, but it's possible."

She wrapped the leg in a baby-blue temporary cast and scheduled the surgery for the following morning. With any luck, he would be fully recovered in two weeks and returned to his nest in the wild virus-free.

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