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Biologists study avian influenza viruses using Chena River ducks

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Brandt Meixell, wildlife biologist with the U.S. Geological Survey Alaska Science Center in Anchorage takes a blood sample from a female Mallard as ducks wintering over in the open water of the Chena River behind the Carlson Center are captured, banded, weighed, measured, and have tissue swab and blood samples taken as part of an avian influenza virus study Saturday, December 15, 2012. Eric Engman/News-Miner

FAIRBANKS — The trap was baited and set, but the ducks weren't cooperating, which wouldn't have been a big deal had the temperature not been 30 degrees below zero.

Standing around when it's that cold gets to be a little uncomfortable when you're only wearing chest waders, even if you have a down parka and long underwear on underneath them, and toe warmers stuck in your boots, which Mark Lindberg did.

"Let's bait the trap again," Lindberg, a biology professor at the University of Alaska Fairbanks, said to his research technician, Megan Zarzycki, as they stood shivering in the parking lot of the Carlson Center. "I don't know how much longer our appendages can take it."

Zarzycki grabbed a plastic bucket with cracked corn in it and followed a path through the snow to the nearby Chena River. She returned a few minutes later to give Lindberg a report.

"They're about 10 yards below it; they're getting closer," she said.

"Let's go warm up for five minutes in the truck and see where we're at," Lindberg said to Zarzycki and fellow researchers Brandt Meixell and Mark Bertram.

The chilled researchers retreated to the warmth of their running vehicles and waited.

Just the day before, they had caught almost 100 ducks in a matter of 10 minutes. On Saturday, for whatever the reason, the ducks weren't as enthusiastic about swimming into the covered wire cage the researchers had set up in an open section of river behind the Carlson Center and baited with cracked corn.



Mark Lindberg, professor of Wildlife Ecology at the University of Alaska Fairbanks, releases a female

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Mallard as ducks wintering over in the open water of the Chena River behind the Carlson Center are captured, banded, weighed, measured, and have tissue swab and blood samples taken as part of an avian influenza virus study Saturday, December 15, 2012. Eric Engman/News-Miner



Mark Lindberg, professor of Wildlife Ecology at the University of Alaska Fairbanks, measures a wing on a female Mallard as ducks wintering over in the open water of the Chena River behind the Carlson Center are captured, banded, weighed, measured, and have tissue swab and blood samples taken as part of an avian influenza virus study Saturday, December 15, 2012. Eric Engman/News-Miner



Mark Lindberg, professor of Wildlife Ecology at the University of Alaska Fairbanks, left, inspects a Mallard that was previously banded while preparing the waterfowl for transport along with UAF research technician Megan Zarzycki, center, and Mark Vertram, a wildlife biologist with the U.S. Fish and Wildlife Service in the Yukon Flats National Wildlife Refuge, right, as ducks wintering over in the open water of the Chena River behind the Carlson Center are captured, banded, weighed, measured, and have tissue swab and blood samples taken as part of an avian influenza virus study Saturday, December 15, 2012. Eric Engman/News-Miner



Brandt Meixell, wildlife biologist with the U.S. Geological Survey Alaska Science Center in Anchorage, baits a trap with cracked corn as ducks wintering over in the open water of the Chena River behind the Carlson Center are captured, banded, weighed, measured, and have tissue swab and blood samples taken as part of an avian influenza virus study Saturday, December 15, 2012. Eric Engman/News-Miner

Duck trappers

With long-handled dip nets slung over their shoulders, Lindberg and Meixell trudged down the snow path to the trap set up in the river. Their boots crunched on the snow in the cold as Zarzycki and Bertram followed behind carrying small, plastic dog kennels.

The researchers theorized the ducks might be getting scared off by pieces of pancake ice that were floating downstream and hitting the trap, making loud noises as they broke up. Or maybe the ducks were leery after the previous day's trapping activity. Perhaps the colder temperatures had something to do with it.

Five minutes later, Lindberg climbed out of his truck and walked to the river to check out the scene. He knelt down and peeked over a snow bank to check the trap. When he turned around, he gave a thumbs up.

We had ducks.

Unique opportunity

While the 300 or so — nobody knows how many there are — mallard ducks that remain in Fairbanks each winter and reside in an open section of the Chena River have been the source of an ongoing philosophical debate about why they stay here and whether people should feed them, which they do, researchers see them as a valuable source of scientific information.

Lindberg and Meixell, a biologist with U.S. Geological Survey in Anchorage, are using the ducks to study how avian influenza viruses move through a bird population. Specifically, Lindberg and Meixell are trying to figure out what percentage of ducks are infected with the bird flu, how long they are infected and how long they are immune to

infection.

"We think they have immunity throughout much of the winter but we don't know," Lindberg said.

Waterfowl, for the most part, shorebirds and coastal birds to a lesser extent, are the major reservoir of avian influenza virus in North America. More viruses have been isolated from ducks than any other species, Lindberg said.

Since August, the two researchers have caught and banded just more than 250 mallards in the Chena River. Researchers take fecal and oral swabs of each bird, as well as blood samples, to be tested for avian influenza.

While swabbing detects flu only during the few days a bird sheds virus particles, the bird's blood contains antibodies that remain detectable for several months.

As they approached the cage, the 20 or 30 ducks trapped inside began furiously flapping their wings trying to escape the cage, which was covered with chicken wire.

Stepping in the water, Lindberg and Meixell reached their nets under the wire covering the cage and scooped up the birds one at a time. Steam rose up from the water as the birds continued their

flapping.

"Here's a band," Brandt said, holding up a brightly colored male mallard that had a metal band around its leg.

He handed it to Bertram, who stuffed it in a kennel.

Lindberg netted another male and pulled it from the net, holding it up with one hand, displaying its green head, chestnut-colored chest and blue wing bar. It looked like a beautiful, healthy bird.

"These guys look really good," he said. "Usually, I can fit a duck in the palm of my hand, but some of these big mallards I can't even get a hand around."

When they netted eight birds — four to a kennel — they pulled the top off the trap, and most of the remaining birds flew away. About a half dozen remained in the cage that Brandt and Lindberg shooed out of the trap.

"OK, I can't feel my right foot any longer so we must be done," Lindberg said, only half joking.

Examination room

Back in a heated garage behind the federal building on 12th Avenue, the researchers formed a sort of assembly line to process the ducks.

Lindberg put a numbered, metal band on the leg of each duck that didn't have one. Then he measured the bill, wing and leg, all of which were recorded in a notebook by Bertram. Lindberg also examined the tail and wing feathers of each duck to determine if they were born this year or in a previous year. Lindberg then folded the duck's head under its wing and places it upside down in a plastic, gallon pitcher to weigh it on a digital scale.

"We've had them down to 1,000 grams, which is 2.2 pounds, and up to 1,700 grams, which is right around 4 pounds," Lindberg said. "That's a big bird."

Then it was Meixell's turn. He turned the duck upside down and inserted a cotton swab in its anus to take a fecal sample. Then he turned the duck over, pried open its beak and used another swab to take a throat sample.

"They can either have a digestive tract infection or an upper respiratory infection," Meixell said, explaining the reason for the two swabs.

Meixell handed the duck to Zarzycki and grabbed a syringe to take a blood sample. As Zarzycki stretched the bird's neck out, Meixell stroked it while feeling for the vein. Finding it, he gently inserted the needle and extracted a small amount of blood that he squirted into a small container and placed in a box.

The blood samples will be sent to Anchorage to be analyzed, while the swab samples will be sent to the Massachusetts Institute of Technology to be tested. Lindberg is hoping to have the results of both tests back sometime next summer.

It's not just avian influenza researchers are looking for, either.

"We don't know anything about viral ecology in birds during the winter," Lindberg said. "Birds in the north have never been sampled in the winter as far as we know."

After banding the birds and collecting their data, the researchers drove the ducks back to where they were caught along the Chena River and released them. The researchers tossed the ducks in the air, and the ducks went back to their home on the river, quacking as they went.

Preliminary results

Researchers already have seen something interesting results from the study. For example, of the 35 birds banded in August, none have been recaptured and only two of 30 birds banded in September have been caught again, which indicates those birds migrated out of Alaska, Lindberg said, noting that one bird banded in August was shot by a hunter in Washington in November.

Not surprisingly, the number of recaptures has gone up significantly since then. Of the 74 birds that were caught Friday, 21 of them were banded in October, an indication that by that time they were here to stay for the winter. One bird that was recaptured was banded by Lindberg and his crew in the Minto Flats last year.

"That's the first bird we've recaptured that wasn't originally banded on the Chena," Lindberg said.

Researchers plan to continue sampling about 50 ducks per month through April or May. By doing that, researchers should be able to figure out how the ducks fare during the winter and how many of them there are, Lindberg said.

"The unique thing about this study is that we can sample the same birds repeatedly in the same setting over the winter," he said.

Contact staff writer Tim Mowry at 459-7587.

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