

around the world as they fly thousands of miles to their winter homes.

Researchers studied the genetic code of flu viruses in birds from 16 countries infected during the 2014 outbreak.

They say bird flu was carried by migrating birds from Asia to Europe and North America via the Arctic.

Bird flu is an infectious disease of poultry and wild birds.

The strain studied was H5N8, which first appeared in South Korea in early 2014.

The virus later spread to Japan, North America and Europe, causing outbreaks at poultry farms between autumn 2014 and spring 2015.

Data sharing

"Bird flu is a major threat to the health and well-being of farmed chickens worldwide," said lead researcher Dr Samantha Lycett of the University of Edinburgh.

"Our findings show that with good surveillance, rapid data sharing and collaboration, we can track how infections spread across continents."

Farmed geese at Poyang Lake, China

The study suggests that the virus spread along two main migration routes - or flyways - for wild birds:

- From the east Asia coast/Korean peninsula, north to the Arctic coast of the Eurasian continent, then west to Europe
- From the Korean peninsula, then east across the Bering Strait and south along the north-west coast of North America.

According to international scientists, contact with infected wild birds or materials contaminated with their droppings was the most likely route of transmission.

Commenting on the research, Dr Derek Gatherer of the University of Lancaster said H5N8 is the latest in a long line of bird flu outbreaks to cause concern.

"Flyways are the routes that migrating ducks, geese and other wildfowl follow every year from their breeding grounds to their winter retreats," he said

"Just as a human airline passenger can spread human flu from continent to continent, each migratory bird that carries bird flu is a potential spread risk to other points along its flyway."

The study, published in the journal **Science**, was conducted by the Global Consortium for H5N8 and Related Influenza Viruses.

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Migration routes hold key to bird flu spread, global study finds

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Tundra swans and other wild birds at Hokkaido Lake, Japan. Credit: Hiroshi Kida

Monitoring the migration routes of wild birds could help to provide early warning of potential bird flu outbreaks, experts say.

The recommendation follows new research that shows migrating birds can help to spread deadly strains of [avian flu](#) around the world.

Some strains of [bird flu](#) viruses are highly lethal in birds they infect and pose a major threat to poultry farms worldwide. In rare cases, the viruses can also infect people and cause life-threatening illness.

Researchers investigated how a subtype of bird flu called H5N8 spread around the world following outbreaks in South Korea that began in early 2014.

The virus spread to Japan, North America and Europe, causing outbreaks in birds there between autumn 2014 and spring 2015.

Scientists analysed migration patterns of [wild birds](#) that were found to be infected with the H5N8 virus. The team then compared the genetic code of viruses isolated from infected birds collected from 16 different countries.

Their findings reveal that H5N8 was most likely carried by long-distance flights of infected migrating wild birds from Asia to Europe and North America via their breeding grounds in the Arctic.

The researchers say their findings reinforce the importance of maintaining strict exclusion areas around poultry farms to keep wild birds out.

Greater surveillance of [wild birds](#) at known breeding areas could help to provide [early warning](#) of threats of specific flu virus strains to birds and people, they add.

Deadly bird flu strains - known as Highly Pathogenic Avian Influenza (HPAI) - can kill up to 100 per cent of the birds they infect within a few days.

The study was conducted by the Global Consortium for H5N8 and Related Influenza Viruses and involved scientists from 32

institutions worldwide.

Lead author Dr Samantha Lycett, of the University of Edinburgh's Roslin Institute, said: "Bird flu is a major threat to the health and wellbeing of farmed chickens worldwide. Our findings show that with good surveillance, rapid data sharing and collaboration, we can track how infections spread across continents."

Professor Mark Woolhouse, also of the University of Edinburgh, said: "This study could only have happened through [bird flu](#) researchers around the world pooling resources and working together. We see this as a model for how scientists should unite to combat infectious diseases of all kinds."

The study is published in the journal *Science*.

More information: "Role for migratory wild birds in the global spread of avian influenza H5N8," *Science*, science.sciencemag.org/cgi/doi/10.1126/science.aaf8852

Provided by University of Edinburgh

"Migration routes hold key to bird flu spread, global study finds" October 13, 2016 <http://phys.org/news/2016-10-migration-routes-key-bird-flu.html>