

Study suggests bird flu can be transmitted by migratory birds

Assumption that poultry poses main risk has to shift, says researcher

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Bird flu, or avian influenza, in humans is often thought to be contracted through close unprotected contact with infected poultry or contaminated environments, but a new study has found another potential pathway through which it can be transmitted.

Habitat destruction – such as through deforestation in coastal habitats – may be bringing migratory birds in closer proximity to communities, facilitating the spread of the disease between the wild flocks and humans, a new study found.

By studying 2,000 blood samples of people living in northern Sabah in Malaysian Borneo, the study, published in *Nature Communications* on Oct 17, found that poultry and non-poultry owners had antibodies to the H5 avian influenza. Along with statistical analyses, this suggested that for the study, there was no correlation between H5 exposure risk and contact with poultry.

Antibodies indicate past exposure to disease and can be used to understand what diseases people were previously exposed to, even if they were not diagnosed or ill.

The antibodies in these individuals reacted to the specific H5 virus strains that were found in wild birds, according to the study conducted by researchers from the Pandemic Sciences Institute at the University of Oxford, Borneo Medical and Health Research Centre at Universiti Malaysia Sabah, and the Saw Swee Hock School of Public Health at the National University of Singapore.

No human case of the H5 flu had been reported in those areas.

Complementing environmental data on habitats and distribution of



Habitat destruction in Malaysian Borneo may be bringing migratory birds in closer proximity to human communities, facilitating the spread of avian flu from wild flocks to humans. Between 1973 and 2015, the island of Borneo lost about 50 per cent of its forest, according to a 2020 report. PHOTO: COURTESY OF KIMBERLY FORNACE

bird species, the researchers found these individuals with the antibodies were living close to migratory shorebird habitats.

Bird flu occurs naturally among wild aquatic birds like ducks and geese and shorebirds like plovers and sandpipers. They can easily infect domestic poultry like chickens through direct contact or through contact with surfaces contaminated with the viruses.

Infected birds can shed the virus in their saliva, nasal secretions and faeces, and infection occurs when there is contact with the virus.

Possible transmission from waterfowl that spend much of their lives on the water's surface, such as geese and swans, was ruled out, as there were no reports of sightings of them in the areas studied.

Borneo sits on the East Asian-

Australasian Flyway – a major bird flyway where migratory birds make their way south from places like Russia to Australia and New Zealand between August and March every year to escape the winter chill. Some of the birds that make stopovers in Malaysian Borneo are the common sandpipers, long-toed stilts, wood sandpipers and common redshanks.

While more research is needed on how people might be exposed to this virus through migratory shorebirds, researchers said this study highlights the need for more surveillance at migratory sites.

Lead author Hannah Klim, a researcher at the Pandemic Sciences Institute, said the study highlights a possible transmission route that has been understood.

One of the corresponding au-

thors for the study, Associate Professor Kimberly Fornace from NUS' Saw Swee Hock School of Public Health, said the assumption that poultry poses the main risk for bird flu has to shift, as humans and wildlife are in closer proximity through urban development and land use change, which increases the risks of spillover infection.

"We need to better understand how we can protect and conserve these habitats to both support wildlife populations and minimise the potential for disease spillover into human populations," she said.

Between 1973 and 2015, the island of Borneo – divided between Indonesia, Malaysia and Brunei – lost about 50 per cent of its forest, according to a separate 2020 report. Habitats, such as mangrove forests, that would have been

home to migratory shorebirds have also been cleared to make room for industrial agricultural efforts, the 2024 study added.

As habitats are increasingly lost to deforestation and disrupted by climate change, Dr Fornace said more research is needed to understand how risks of zoonotic diseases spreading from wildlife to people may change in this rapidly changing environment.

More research is also needed before implementing control measures, said Dr Fornace, who hopes that the culling of wildlife is not the solution.

"Previous studies attempting to cull wildlife to control diseases have been highly unsuccessful. This often disrupts ecosystems even more and can even increase disease risks," she added.

Professor Dale Fisher of the NUS Yong Loo Lin School of Medicine, who was not involved in the study, said the study is important as it suggests that humans are being exposed to avian influenza more frequently than thought.

"This study means we need to look at avian influenza spread in a new way," said Prof Fisher, who is also senior consultant in the infectious diseases division at the National University Hospital.

He said that while human cases of bird flu are said to have been infected by domestic birds and poultry, this study suggests that humans with no exposure to poultry yet live in the flight paths of migratory birds may have been exposed and had mild disease.

While the method of transmission cannot be explained now, Prof Fisher said human encroachment of bird habitats due to urbanisation increases interaction between humans and wildlife.

The study may be a stimulus for increased surveillance for genetic mutations of the avian influenza, which may lead to human-to-human transmission, as well as research to understand the transmission methods, he added.

Warmer temperatures and extreme weather events can lead to wild animals or birds, which can carry viruses, moving to new geographical areas or closer to human populations, said Dr Mary Rodgers, associate research fellow at Abbott's diagnostic business, who was not involved in the study.

Another expert not involved in the study, Professor Dirk Pfeiffer, said such studies should be replicated in other locations where migratory birds and humans are in close proximity to find out the risks of such transmission pathways, which can then be assessed for the most effective measures.

The professor of veterinary medicine at City University of Hong Kong said it is vital to not overreact when it comes to measures.

"We need to remind ourselves that humans are part of the global ecosystem with other species... Transmissions between species have and will always happen as long as we share this planet with other species like plants and animals," said Prof Pfeiffer.

"We should not react by keeping people away from nature but rather, guide them to engage in sensible behaviours that minimise risk of exposure to diseases potentially present in natural habitats."

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