



PRESS RELEASE (2024/08/01)

Tiny flyers with large impact: Blowflies carry bird flu virus

A new study from a wild bird colony in southern Japan reveals that blowflies are a potential means of bird flu transmission.

Fukuoka, Japan – Researchers from Kyushu University have discovered that blowflies, a family of flies strongly attracted to decaying flesh and feces, are carrying the bird flu virus in southern Japan. Their findings, published in *Scientific Reports*, introduce a potential new route of transmission for bird flu and highlight the need to develop new countermeasures to prevent and control the disease in poultry farms.

Since 2020, bird flu has been spreading rapidly around the globe, leading to the death of millions of wild birds and the culling of more than half a billion farmed birds worldwide. In Japan, where a single case of infection on a poultry farm mandates the culling of the entire stock, the 2022-2023 winter season saw a record-high of 326 outbreaks of bird flu, resulting in the sacrifice of 17.7 million birds. Some strains of bird flu have also jumped to mammals, including cows, goats, dogs, cats, and since March, an uptick of cases in poultry and dairy workers, with a high fatality rate, has raised significant concern.

"Bird flu has been causing substantial damage to wildlife and the poultry industry, and also holds great risk for humans who work closely with livestock. It's therefore vital to understand how the virus spreads and its potential routes of transmission to control and prevent outbreaks," explains first author [Associate Professor Ryosuke Fujita](#) of Kyushu University's Faculty of Agriculture.

In this research, the scientists studied a wild crane colony in Izumi city, Kagoshima Prefecture, in southern Japan. In winter, the prime season for bird flu, thousands of cranes migrate to this area, with their dense numbers making them vulnerable to infection. During winter 2022-2023, 1600 cranes out of colony of 10000 cranes died from bird flu.

"We were notified about the cranes being infected and we had to act quickly," says Fujita.

Along with his colleagues, he set traps at different locations around Izumi city to collect blowflies. "We were particularly interested in one species of blowfly, *Calliphora nigribarbis*, as unlike other fly species, they are active in winter, coinciding with the peak season of bird flu. This, along with their attraction to the flesh and feces of animals, makes them a prime suspect for spreading the virus," adds Fujita.

The researchers collected 648 blowflies and discovered that 14 blowflies were carrying the bird flu virus. The majority of virus-positive blowflies were collected from the sample site closest to the crane colony. "While 14 blowflies may seem like a low number, this represents a prevalence in blowflies of 2.2%, which is a huge percentage compared to other diseases spread by insects," explains Fujita. The research team also used genetic testing to confirm that the blowflies were carrying the same virus strain that has been infecting the crane colony.

Unlike birds and mammals which the virus infects and replicates inside, blowflies instead ingest the virus from infected dead birds or their waste, with the virus maintaining infectivity for up to two days. Blowflies are capable of flying at least 2 kms per day, so the researchers estimate that it is feasible for them to reach nearby poultry farms or other wild bird populations within a 4 km range. The researchers believe that as the blowfly moves from place to place, it could contaminate surfaces, food sources and water sources, with healthy birds becoming infected through direct contact with these contaminated sources, or by ingesting adult or larval blowflies.

In Japan, where farmers often use closed farming systems instead of open spaces to control infections and maximize production, countermeasures aimed at eliminating blowflies could be implemented fairly easily, helping to protect farmers from severe financial damage.

"By keeping areas clean and using fly control methods, such as fine nets or insecticides, we can reduce the risk of virus spread to indoor poultry farms. However, in outdoor farms in other countries, and in wild bird populations, controlling blowflies may be logistically impossible," says Fujita.

Having identified that blowflies carry the virus, Fujita and his colleagues are now collaborating with the government to capture blowflies in quarantined sites around infected poultry farms, hoping to find definitive evidence that blowflies are causing these outbreaks. Fujita and his colleagues are also developing new tools that use artificial intelligence to assess and predict the potential risks of vector insects. "By using advanced technologies alongside on-the-ground research, we can better understand and control the spread of bird flu and other insect-borne diseases, ultimately safeguarding both animal and human health," concludes Fujita.

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For more information about this research, see Fujita, R., Tachi, T., Hino, M. *et al.* Blowflies are potential vector for avian influenza virus at enzootic area in Japan. *Sci Rep* **14**, 10285 (2024). <https://doi.org/10.1038/s41598-024-61026-1>

About Kyushu University

Founded in 1911, [Kyushu University](#) is one of Japan's leading research-oriented institutes of higher education, consistently ranking as one of the top ten Japanese universities in the Times Higher Education World University Rankings and the QS World Rankings. The university is one of the seven national universities in Japan, located in Fukuoka, on the island of Kyushu—the most southwestern of Japan's four main islands with a population and land size slightly larger than Belgium. Kyushu U's multiple campuses—home to around 19,000 students and 8000 faculty and staff—are located around Fukuoka City, a coastal metropolis that is frequently ranked among the world's most livable cities and historically known as Japan's gateway to Asia. Through its [VISION 2030](#), Kyushu U will "drive social change with integrative knowledge." By fusing the spectrum of knowledge, from the humanities and arts to engineering and medical sciences, Kyushu U will strengthen its research in the key areas of decarbonization, medicine and health, and environment and food, to tackle society's most pressing issues.

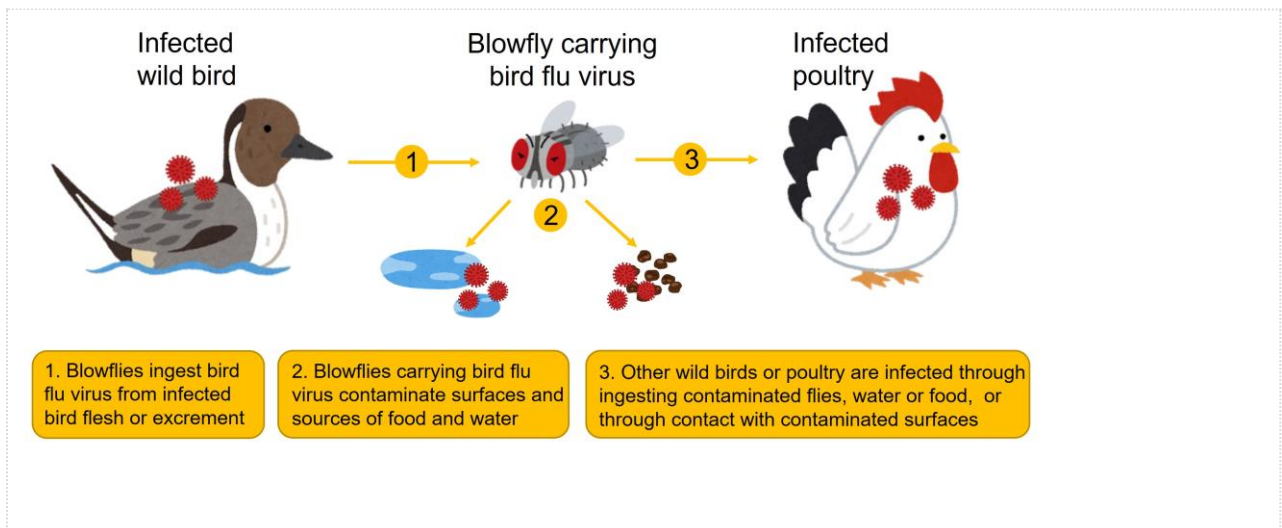


Fig. 1. Transmission of bird flu from infected wild birds to other wild birds or poultry via blowflies.



Fig. 2. Wild crane colony in Izumi City, Kagoshima, Japan. (Ryosuke Fujita, Kyushu University)



Fig. 3. The blowfly, a potential means of bird flu transmission. (Ryosuke Fujita, Kyushu University)

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