FAOAIDEnews
Animal Influenza Disease Emergency

Situation Update 74
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HPAI outbreaks reported in this publication refer to officially confirmed cases only.
The information is compiled from the following sources: World Organisation for Animal Health (OIE), national governments and their ministries, and the European Commission (EC) – these sources are responsible for any errors or omissions.

HPAI local persistence and long-distance dispersal is studied

Since late 2003, H5N1 highly pathogenic avian influence (H5N1 HPAI) has caused outbreaks primarily in poultry across Africa, Asia and Europe, with wild bird outbreaks most frequently documented in the central Asia flyway and parts of the African-Eurasian flyway. H5N1 HPAI has persisted over several years in many areas and, as of 2011, five countries are considered endemically infected. Viral persistence poses a threat to animal (domestic and wild) and human health, as well as impacting livelihoods and food security of millions of people.

While it has been empirically demonstrated that H5N1 HPAI risk in Southeast Asia is related to domestic ducks grazing openly in rice agricultural systems and human densities, relatively little is known about the interplay between persistence and dispersal. In fact, a hypothesis that had never been studied is that the global persistence of H5N1 HPAI results from the interplay between the high capacity to persist in domestic poultry in localized areas and sporadic long-distance introduction events through migratory birds.

To test this hypothesis, an international team of research scientists from Asia, Europe and the United States expanded previous work on geospatial risk analysis to include South and Southeast Asia, as well as integrating migration ecology data from satellite-tracked wild waterfowl along the Central Asia flyway. Their work and conclusions have been outlined in a journal article titled: “Flying over an Infected Landscape: Distribution of Highly Pathogenic Avian Influenza H5N1 in South Asia and Satellite Tracking of Wild Waterfowl” published in *EcoHealth* (January 2011).

Briefly, through satellite tracking of Ruddy Shelduck (*Tadorna ferruginea*) and Bar-headed Geese (*Anser indicus*), the results from this investigation reveal a direct spatial-temporal relationship between areas identified at highest H5N1 HPAI risk in India and Bangladesh and the wild bird outbreaks that occurred in China from May to July 2009. Furthermore, it points out that domestic duck populations are the main factor delineating areas at risk of H5N1 HPAI spread in domestic poultry is South Asia, thus confirming what was found to be the case in Southeast Asia.

Contents

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This study underscores the potential for integrating H5N1 HPAI risk modeling with wild waterfowl migration ecology data to map and track hotspots, introduction, persistence and spread of this disease along the Asian flyways. Also, it provides supporting evidence that the dynamics of continental disease transmissions are hinged on a number of persistence areas where large numbers of domestic ducks reside, connected with sporadic transmission through migratory waterfowl.

As the Food and Agriculture Organization of the United Nations (FAO) and its partners move forward with its unwavering support to the 'One Health' approach, this type of studies prove to be critically essential to link pernicious emerging diseases with animal populations, husbandry practices, people and agro-ecological regions around the world.

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Cleaning and disinfection along the Jakarta poultry market chain to reduce HPAI risk

Jakarta, the capital of Indonesia, has a population of 9.6 million people living on 662 km^2 of land, making it the most densely populated area in Indonesia. Along with a high human density, the density of poultry marketing is also high in order to meet the demand of Jakarta's population. Approximately 1 million birds are consumed in Jakarta daily. Poultry is distributed to consumers at over 200 live bird markets within the greater Jakarta area. Incoming poultry originate from all over Java, as well as Lampung Province on the island of Sumatra. Over 500 trucks carry poultry from poultry farms to Jakarta collector yards each day. As a result of this massive movement and concentration of poultry in Jakarta, it is believed the market chain serves as a means of spreading virus between farms as well as exposing urban human populations to H5N1 avian influenza virus.

FAO recognizes the importance of reducing virus spread via the poultry market chain. Therefore FAO Indonesia, in collaboration with the Ministry of Agriculture of Indonesia and private sector market traders, initiated a cleaning and disinfection programme for poultry transport vehicles at collector yards. By reducing viral contamination on empty poultry transport trucks leaving the collector yard, the risk of virus spread from farm to farm via collector yard should, in theory, be reduced. FAO has also supported the local governments in the greater Jakarta area to improve sanitation and hygiene in live bird markets in and around the city. By maintaining cleaner market environments where live birds are displayed to consumers, it is expected that the risk of virus spread to humans will be reduced. These programmes also serve as a stimulus for the government and private sector to work together to reduce H5N1 avian influenza risk to poultry and humans.

As of December 2010, training on cleaning and disinfection procedures, as well as use of high pressure washers, detergent, disinfectant, and awareness raising have been provided to vendors and traders in 43 collection yards and 14 live bird markets in the greater Jakarta area. Three cleaning and disinfection stations for exiting trucks have also been established at the major collector yards in East Jakarta. The cleaning and disinfection stations have been established so that

sustainable usage by collector yard managers is enabled via cost recovery for consumables and facility maintenance. Furthermore, collaboration between the public and private sectors is fostered through active monitoring by local government livestock services of all cleaning and disinfection activities at markets and collector yards.

Moving forward in 2011, FAO Indonesia is working with the Ministry of Agriculture and local governments of Indonesia to specifically address high-risk market chains which have been identified, such as the movement of native chickens from East Java and Central Java for consumption in Jakarta.

A collector yard surveillance programme is also expected to be established to complement an ongoing surveillance programme already in place in live mixed-bird markets in greater Jakarta. Finally, FAO and the government of Indonesia will continue to work together with the private sector to rehabilitate live bird markets in greater Jakarta and establish cleaning and disinfection facilities at key collector yards throughout the region. Further minimizing risk of virus spread via the market chain will be an important contribution towards overall control of H5N1 avian influenza in Indonesia.

MOST RECENT H5N1 AI OUTBREAKS 2006-2011

Note: This list has been compiled on the basis of information up to 31 January 2011.

2011

January	Bangladesh, Cambodia, China (Hong Kong SAR), Egypt, Japan, Korea (Republic of), Myanmar

2010

December	Indonesia, Viet Nam
October	Nepal
June	Russian Federation
May	China, Israel, **Mongolia**
April	Lao PDR
March	Bhutan, **Bulgaria**, Myanmar, Romania
January	India

2009

March	Germany

2008

November	Thailand
September	Togo
July	Nigeria
June	Pakistan
May	United Kingdom
March	Turkey
February	**Switzerland**, Ukraine
January	Saudi Arabia

2007

December	Benin, Iran, Poland
October	Afghanistan
August	France
July	Czech Republic
June	Ghana, Malaysia
April	Kuwait
January	Côte d'Ivoire, Hungary

2006

August	Sudan
July	**Spain**
June	Niger
May	Burkina Faso, Denmark
April	Djibouti, Sweden, West Bank & Gaza Strip
March	Albania, **Austria**, Azerbaijan, Cameroon, **Croatia**, **Greece**, Jordan, Kazakhstan, Serbia, **Slovenia**
February	**Bosnia-Herzegovina**, **Georgia**, Iraq, **Italy**, **Slovakia**

AT A GLANCE

The latest HPAI outbreaks for the period 1 – 31 January 2011

Note AIDEnews publishes reports of **confirmed HPAI cases** using the following sources: OIE, European Commission, FAO and national governments.

AFRICA

Egypt

A total of 103 H5 HPAI positive cases were reported in 15 governorates during January 2011 (number of outbreaks in brackets): Aswan (3), Beheira (1), Beni Suef (2), Dakahlia (12), Fayoum (13), Gharbia (11), Kafr-el-sheikh (9), Luxor (1), Menoufia (12), Minya (12), Qalyubia (14), Qena (2), Sharqia (5), Sixth of October (5) and Suez (1) Governorates. More than 71,306 birds were culled. Of the 103 outbreaks, 90 were in backyard poultry (chickens, ducks, geese, turkeys) and 13 were in commercial chicken farms; and 10 outbreaks in commercial farms occurred even though they had been vaccinated (Beheira (1), Fayoum (4), Menoufia (1), Qalyubia (4)).

ASIA

Cambodia

An outbreak of H5N1 HPAI occurred on 27 January 2011 in Prek Dom Village, Kampong Svay Commune, Svay Rieng District, Kandal Province. Chicken samples were tested positive by PCR at the National Veterinary Research Institute (NaVRI) and confirmed by the Pasteur Institute, Phnom Penh.

Bangladesh

H5N1 HPAI outbreaks occurred on 1 and 24 January 2011 in commercial poultry farms in Dohar Upazila, Dhaka District, and Bandar Upazila, Narayangonj District, in Dhaka Division. A total of 16,493 birds have died or been destroyed.

Japan

From 21 to 27 January 2011, H5N1 HPAI outbreaks were reported in five farms in three prefectures (Aichi, Kagoshima and Miyazaki Prefectures), approximately 664,000 birds were destroyed. A 10 km radius movement control and surveillance zones were set, which included more than 16 million birds in the areas. A total of 18 wild birds that were found weakened or dead throughout Japan during January were tested positive for H5N1 avian influenza. Species include: black-headed gull (*Larus ridibundus*), greater scaup (*Aythya marila*), little grebe (*Tachybaptus ruficollis*), Mandarin duck (*Aix galericulata*), northern pintail (*Anas acuta*), pochard (*Aythya ferina*), tufted duck (*Aythya fuligula*), whooper swan (*Cygnus cygnus*); 7 out of the 18 were tufted ducks.

China (Hong Kong SAR)

An Oriental magpie robin (*Copsychus saularis*) found dead in Fairview Park, Yuen Long on 17 January 2011 and a black-headed Gull (*Larus ridibundus*) found dead in Lantau on 24 January were tested positive for H5; and H5N1 was confirmed in a large-billed crow (*Corvus macrorhynchos*) found dead in Tai O on 18 January, and two chicken carcasses found at a beach in Tai O on 28 January.

Indonesia

The Participatory Disease Surveillance & Response (PDSR) programme through 33 Local Disease Control Centres covers 71,547 villages in 85 percent of Indonesia's 448 districts and municipalities in 29 of its 33 provinces. During December 2010, PDSR conducted surveillance in 1,662 villages (2.3 percent). The overall HPAI incidence was 1.2 infected villages per 1,000 villages under surveillance.

Korea, the Republic of

During January 2011, a total of 39 outbreaks of H5N1 HPAI were confirmed in poultry farms in five of its eight provinces ("do"). The farms affected were in (number of outbreaks in brackets): Chungcheongnam-do (4), Gyeonggi-do (11), Gyeongsangbuk-do (1), Jeollabuk-do (1), Jeollanam-do (22). Of the 39 outbreaks, ducks are involved in 28 outbreaks. A total of 1,231,880 birds were culled in January. In the Republic of Korea, poultry in the affected farms and in the area within a 500m radius of the affected farms are destroyed. No further deaths of wild birds associated with H5N1 were reported during January.

Myanmar

H5 HPAI outbreaks were reported in a farm in Rakhine State in early January and later in an additional six farms, and also in two farms in Sagaing State. The farms where outbreaks occurred were mostly chicken layer farms, while some also kept ducks. The outbreak in the first reported farm started on 6 January 2011. The outbreak in the second to fifth farms were reported to have started on 18 – 21 January 2011, and these farms had some birds sent to a market when outbreaks started. Further outbreaks were reported to have started on 22, 23 and 26 January. So far a total of 55,286 birds have died or been culled.

SUMMARY OF CONFIRMED HPAI OUTBREAKS

(As of 31 January 2011)

Sources: OIE, European Commission (EC), FAO and national governments – WHO for human cases/deaths
Note: H5N1 unless otherwise indicated. Highlighted countries indicate those in which there has been only one officially confirmed H5N1 outbreak or occurrence. Dates of the last outbreak within this year are in bold.

AFRICA	First outbreak	Latest outbreak	Animals affected to date	Human cases / deaths to date
Benin	7 November 2007	15 December 2007	Domestic poultry	-
Burkina Faso	1 March 2006	20 May 2006	Domestic poultry - wild birds	-
Cameroon	21 February 2006	28 March 2006	Domestic poultry – wild birds	-
Côte d'Ivoire	31 March 2006	31 January 2007	Domestic poultry – wild birds	-
Djibouti	6 April 2006	6 April 2006	Domestic poultry	1 / 0
Egypt	17 February 2006	**28 January 2011**	Domestic poultry – wild birds – donkeys*	**122 / 40**
Ghana	14 April 2007	13 June 2007	Domestic poultry	-
Niger	6 February 2006	1 June 2006	Domestic poultry	-
Nigeria	16 January 2006	22 July 2008	Domestic poultry – wild birds	1 / 1
Sudan	25 March 2006	4 August 2006	Domestic poultry	-
Togo	6 June 2007	8 September 2008	Domestic poultry	-

ASIA	First outbreak	Latest outbreak	Animals affected to date	Human cases / deaths to date
Afghanistan	2 March 2006	2 October 2007	Domestic poultry – wild birds	-
Bangladesh	5 February 2007	**24 January 2011**	Domestic poultry	1 / 0
Bhutan	18 February 2010	14 March 2010	Domestic poultry	-
Cambodia	12 January 2004	**28 January 2011**	Domestic poultry – wild birds	10 / 8
China	20 January 2004	9 May 2010 wild birds	Domestic poultry – wild birds	40 / 26
China (Hong Kong SAR)	19 January 2004	**24 January 2011**	Domestic poultry – Wild birds	
India	27 January 2006	30 January 2010	Domestic poultry	-
Indonesia	2 February 2004	December 2010	Domestic poultry – pigs (with no clinical signs)	171/ 141
Japan	28 December 2003	**30 January 2011**	Domestic poultry – wild birds – raccoons (no clinical signs)	-
Kazakhstan	22 July 2005	10 March 2006	Domestic poultry – wild birds	-
Korea, Rep. of	10 December 2003	**25 January 2011**	Domestic poultry – wild birds	-
Lao PDR	15 January 2004	27 April 2010	Domestic poultry	2 / 2
Malaysia	7 August 2004	2 June 2007	Domestic poultry – wild birds	-
Mongolia	10 August 2005	3 May 2010	Wild birds	-
Myanmar	8 March 2006	**26 January 2011**	Domestic poultry	1 / 0
Nepal	8 January 2009	25 October 2010	Domestic poultry	-
Pakistan	23 February 2006	17 June 2008	Domestic poultry – wild birds	3 / 1
Thailand	23 January 2004	10 November 2008	Domestic poultry – wild birds – tiger	25 / 17
Viet Nam	9 January 2004	2 December 2010	Domestic poultry	119/ 59

NEAR EAST	First outbreak	Latest outbreak	Animals affected to date	Human cases / deaths to date
Iran	2 February 2006	10 December 2007	Domestic poultry - wild birds	-
Iraq	18 January 2006	1 February 2006	Domestic poultry – wild birds	**3 / 2**
Israel	16 March 2006	2 May 2010	Domestic poultry – Emu (zoo)	-
Jordan	23 March 2006	23 March 2006	Domestic poultry	-
Kuwait	23 February 2007	20 April 2007	Domestic poultry – wild birds - zoo birds	-
Saudi Arabia	12 March 2007	29 January 2008	Domestic poultry	-
West Bank & Gaza Strip	21 March 2006	2 April 2006	Domestic poultry	-

* Journal of Biomedical Science: http://www.jbiomedsci.com/content/17/1/25

EUROPE	First outbreak	Latest outbreak	Animals affected to date	Human cases / deaths to date
Albania	16 February 2006	9 March 2006	Domestic poultry	-
Austria	10 February 2006	22 March 2006	Wild birds – cats	-
Azerbaijan	2 February 2006	18 March 2006	Wild birds – domestic poultry – dogs	**8 / 5**
Bosnia-Herzegovina	16 February 2006	16 February 2006	Wild birds	-
Bulgaria	31 January 2006	29 March 2010	Wild birds	-
Croatia	21 October 2005	24 March 2006	Wild birds	-
Czech Republic	20 March 2006	11 July 2007	Wild birds – domestic poultry	-
Denmark	12 March 2006	22 May 2006	Wild birds – domestic poultry	-
France	17 February 2006	14 August 2007	Wild birds – domestic poultry	-
Georgia	23 February 2006	23 February 2006	Wild birds	-
Germany	8 February 2006	10 January 2009 mallard, wild	Wild birds – domestic poultry – cats – stone marten	-
Greece	30 January 2006	27 March 2006	Wild birds	-
Hungary	4 February 2006	23 January 2007	Wild birds – domestic poultry	-
Italy	1 February 2006	19 February 2006	Wild birds	-
Poland	2 March 2006	22 December 2007	Wild birds – domestic poultry	-
Romania	7 October 2005	27 March 2010	Wild birds – domestic poultry – cat	-
Russian Federation	15 July 2005	5 June 2010 wild birds	Domestic poultry – wild birds	-
Serbia	28 February 2006	16 March 2006	Wild birds – domestic poultry	-
Slovakia	17 February 2006	18 February 2006	Wild birds	-
Slovenia	9 February 2006	25 March 2006	Wild birds	-
Spain	7 July 2006	9 October 2009 (H7)	Poultry	-
Sweden	28 February 2006	26 April 2006	Wild birds – domestic poultry - game birds – mink	-
Switzerland	26 February 2006	22 February 2008	Wild birds	-
Turkey	1 October 2005	9 March 2008	Domestic poultry – wild birds	**12 / 4**
Ukraine	2 December 2005	11 February 2008	Wild birds – domestic poultry – zoo birds	-
United Kingdom	30 March 2006	22 May 2008 (H7N7)	Wild birds – domestic poultry	-