FAOAIDEnews
Animal Influenza Disease Emergency

Situation Update 71
16 November 2010

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.

Value chain analysis as a tool for avian influenza control

Linking value chains and animal health makes intuitive sense. A value chain links a range of activities and processes to bring products from conception to consumer. The analysis and mapping of value chains is now being used as a tool for animal disease risk management because it provides an understanding of the social and economic contexts within which animal diseases evolve and manifest.

Linking value chains with epidemiological analyses can allow for improved and targeted animal disease risk management because their combination facilitates the viewing of interactions between animal, pathogens, people and systems. In the past, preliminary studies on poultry chains and highly pathogenic avian influenza have identified certain units as being risky, such as producers with poor biosecurity and live mixed-bird markets with inadequate hygiene practices.

Once a value chain has been mapped, a systematic identification of critical risk points ensues, followed by enumeration and the development of possible animal disease control and management measures to be applied to bring risk(s) down to an acceptable level. Furthermore, these critical risk points are intimately linked to people, and so their incentives, motivations and practices can be studied within their specific position in the chain and respective risk profiles. This understanding of collective and individual decision making assists animal and human health officials to develop socially-coherent and cost-effective interventions for improved food security and food safety.

In view of the applicability of this method to animal diseases in different contexts, a sequence follows herewith: (1) mapping the value chain, (2) identification of critical risk points along the chain, (3) identification of people and networks involved at risk points, (4) categorization of risky practices, incentives and motivations, (5) identification of entry points for animal disease control and management interventions, (6) assessment of costs and investments of proposed interventions, and (7) estimation of expected impacts of interventions applied.

The Animal Production and Health Division at the Food and Agriculture Organization of the United Nations (FAO) undertakes value chain analysis and mapping in order to clarify feasible and viable options to address high-impact transboundary diseases that are emerging and re-emerging around the world. It will continue its work to raise levels of nutrition, improve agricultural productivity, better the lives of rural populations and contribute to economic growth.

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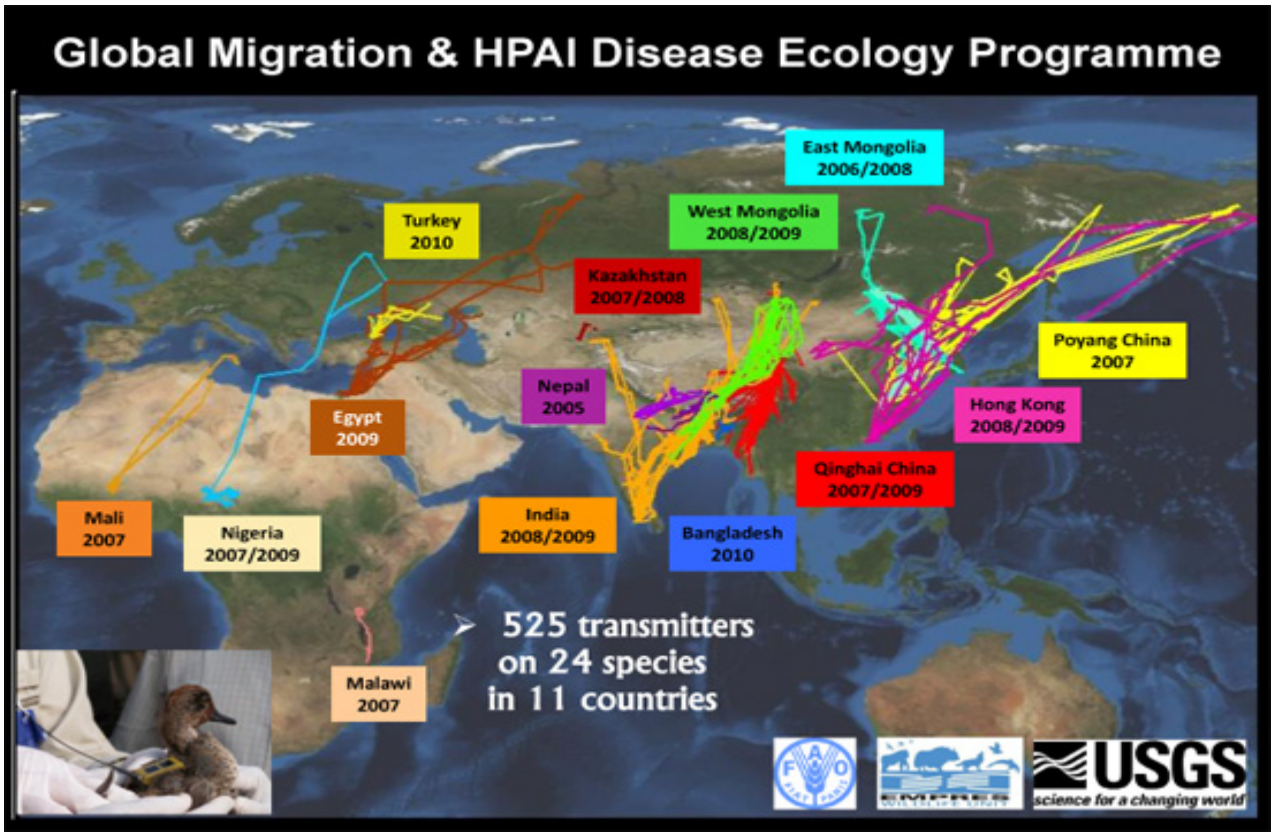
Avian influenza research by FAO and partners focused on China's Qinghai Lake

The emergence of highly pathogenic avian influenza (H5N1 HPAI) has wreaked havoc in avian (domestic and wild) and human populations. According to the World Health Organization, since 2003, H5N1 HPAI has killed 302 people, including 20 so far this year. It is estimated that more than 250 million infected domestic poultry have been culled in Southeast Asia. For the most part, H5N1 HPAI has been held in check by early detection, early reporting, rapid response, improved disease surveillance, better husbandry practices, poultry vaccinations, and other disease mitigation measures, but still, so far this year, 16 countries report viral outbreaks in poultry.

In 1996, H5N1 HPAI was isolated from a domestic goose in China's Guangdong Province. To the northwest, on Qinghai Lake, China's largest inland body of salt water, more than 100,000 migratory birds descend every summer to breed or rest during their northern spring migration. Interestingly, the single largest wild bird mortality event attributable to H5N1 HPAI occurred here in 2005, when more than six thousand wild birds died at Qinghai Lake —roughly 50 percent of birds that died were bar-headed geese. Several other large scale mortality events have been reported from this virus, primarily in Russia, but in more recent years, mortality events are in the tens to hundreds of birds, rather than in the thousands which is what typically occurs when this virus is initially introduced into wild bird populations.



Given that H5N1 HPAI is able to infect animals and humans and is not likely to be eradicated in the near future, researchers and scientists need a better understanding of domestic and wild bird distributions, ecosystem and habitat use, daily movements, longer migration routes, as well as husbandry practices, animal farming, trade and marketing systems, and points of contact between wild birds, livestock and people. Much of this information can be feasibly obtained through field investigations and technological applications.

To illustrate this point, for example, GPS data collection on migration pathways is used to explore the relationships between different groups of birds and their interactions with domestic fowl in varied agro-ecological landscapes devoid of human observers.

In an effort to pinpoint the role that wild birds play in transboundary disease transmission along major migratory flyways, a team led by the Food and Agriculture Organization of the United Nations (FAO) and the United States Geological Survey (USGS) has to date mounted GPS transmitters on more than 525 waterfowl from 24 species in 11 countries to track their migration by satellite. This and other investigations began after H5N1 HPAI swept the region in 2005 and beyond.

Team researchers now know that the majority of bar-headed geese tagged at Qinghai Lake spend their winters in the Lhasa region of Tibet or further south in India. In these wintering grounds, wild birds have exposure to domestic poultry and potentially, farmed wild birds; and since H5N1 HPAI outbreaks have been reported here, this could be an indication of a dissemination pathway for the virus to move among wildfowl and captive birds, eventually being carried to places along migration routes.

If this is so, wild waterfowl on the eastern portion of the Central Asian Flyway may in fact be helping spread H5N1 HPAI into Mongolia each spring as they move across the Qinghai-Tibetan plateau to the north and east. Most interesting is that this repeatable pattern of wild bird outbreaks at the northern end of their migration pathway each spring does not appear to be occurring in other major flyways, thus demonstrating the complexity surrounding the role of wild birds in the disease epidemiology. In view of this, funding for this type of field research will continue to be important so long as the virus remains persistent and endemic in certain countries, which in turn help spur fears that the virus could mutate into a more transmissible form among humans.

Read "Wildlife and H5N1 HPAI: Fact Sheet" or a Science article on "Lethal Bird Flu".

MOST RECENT H5N1 AI OUTBREAKS 2006-2010

Note: This list has been compiled on the basis of information up to 31 October 2010.

2010

October	Egypt
September	Indonesia
July	Viet Nam
June	Bangladesh, Russian Federation
May	China, Israel, **Mongolia**
April	Cambodia, Lao PDR
March	Bhutan, **Bulgaria**, China (Hong Kong), Myanmar, Nepal, Romania
January	India

2009

March	Germany

2008

November	Thailand
September	Togo
July	Nigeria
June	Pakistan
May	Japan, Korea (Republic of), 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**

***Green**: areas which never had reported outbreaks in poultry*

Sources: World Organisation for Animal Health (OIE), European Commission (EC), FAO and national governments

AT A GLANCE

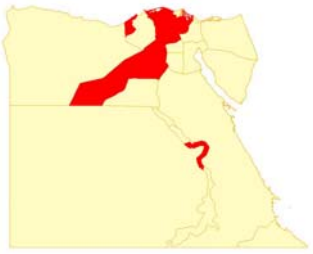
The latest HPAI outbreaks for the period 1 – 31 October 2010

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

AFRICA

EGYPT

A total of 26 H5 HPAI positive cases were reported in 12 governorates during 1 - 31 October 2010: Alexandria (1), Beni Suef (2), Dakahlia (3), Fayoum (4) Gharbia (3), Kafr el sheikh (3), Luxor (1), Menoufia (4), Qualioubia (1) Qina (2), Sharkia (1), Sixth of October (1) Governorates (The number of outbreaks in the governorate is in brackets). All of the outbreaks were in household poultry, only one house hold had vaccination history. Total 1433 birds in 26 outbreaks were culled.



ASIA

INDONESIA

The Participatory Disease Surveillance & Response (PDSR) programme through 33 Local Disease Control Centres covers 71,249 villages in 84% of Indonesia's 448 districts and municipalities in 29 of its 33 provinces. During September 2010, PDSR conducted surveillance in 1,386 villages (1.9%). The overall HPAI incidence was 0.7 infected villages per 1000 villages under surveillance.

JAPAN

The Ministry of Environment announced that a H5N1 AI virus was found through the surveillance of wild duck dropping conducted by the Hokkaido University. The virus was isolated from 2 of the 183 samples taken on 14 October 2010 at Lake Onuma, Wakkanai City (E141.7593, N45.3788, the centre of the lake not the sampling site). Hokkaido Prefecture checked farm within 10 km (1 farm) and no abnormality found. There is no death of wild birds found in the Onuma area.

SUMMARY OF CONFIRMED HPAI OUTBREAKS

(As of 31 October 2010)

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	**30 October 2010** Qina	Domestic poultry – wild birds – donkeys*	**112 / 36**
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	**19 June 2010**	Domestic poultry	1 / 0
Bhutan	**18 February 2010**	**14 March 2010**	Domestic poultry	-
Cambodia	12 January 2004	**22 April 2010**	Domestic poultry – wild birds	**10 / 8**
China	20 January 2004	**9 May 2010** wild birds	Domestic poultry – wild birds	**39 / 26**
China (Hong Kong SAR)	19 January 2004	**26 March 2010**	Wild birds	-
India	27 January 2006	**30 January 2010**	Domestic poultry	-
Indonesia	2 February 2004	**September 2010**	Domestic poultry – pigs (with no clinical signs)	**170 / 141**
Japan	28 December 2003	**14 October 2010** (virus found in wild duck dropping)	Domestic poultry – wild birds – raccoons (with no clinical signs)	-
Kazakhstan	22 July 2005	10 March 2006	Domestic poultry – wild birds	-
Korea, Rep. of	10 December 2003	12 May 2008	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	**1 March 2010**	Domestic poultry	1 / 0
Nepal	8 January 2009	**8 March 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	**18 July 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	-