



CHINA

Size and nature of poultry population make surveillance difficult

The recent number of H5N1 avian influenza-related human cases in China's appears to lack the hallmark of nearby poultry outbreaks, writes CIDRAP News (21 January 2009), adding that this is a development that some public health officials worry could signal asymptomatic infections in birds. China has reported four human cases so far this year, three of them fatal.

Veterinary experts suggest the pattern could point for example to surveillance gaps or the consequences and insufficient vaccination coverage. Jan Slingenbergh, a senior animal health officer at FAO, notes that China has roughly 4.6 billion chickens, 700 million ducks and 300 million geese distributed somewhat unevenly throughout the country.



Chinese duck farm (FAO/Vincent Martin)

He says the ducks gravitate towards the double-crop rice growing areas in southern and southeastern China, which are thought to be the main risk areas because the H5N1 virus keeps circulating in ducks. Geese head toward single-crop rice growing areas in the less rainy northeastern and extreme western part of China, he adds, while chickens are kept everywhere people live, particularly in urban areas and coastal ports.

Slingenbergh links the low level of poultry outbreak reports to China's poultry vaccination policy. "The entire national flock is kept under a rigid vaccination blanket amounting to 11 billion applications per annum."

He doubts that H5N1 in China is evolving toward a low-pathogenic virus. "Insufficient Vaccination coverage creates a rather sparse geospatial mosaic of susceptibles." He adds that evidence from Viet Nam, to where most Chinese viruses spread, suggests that the virulence increased between 2004 and 2007 when measured by infecting and gauging shedding in young mallards.

Vincent Martin, a senior technical adviser in the FAO's Beijing office, told CIDRAP News that Chinese officials obtain a lot of samples from farms and live bird markets each year to monitor asymptomatic H5N1 infections among the birds.

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"Regularly, they find the virus but do not detect any outbreak in the surrounding areas," he said. However, a combination of factors makes detecting the virus difficult." Several strains of the virus are circulating in China, and ducks can excrete the virus without showing clinical signs or only exhibiting mild ones. In addition, suboptimal vaccination can be unable to stop the viral shedding.

According to Martin, more intensive surveillance and monitoring efforts are needed in China to detect new outbreaks and identify viral circulation that is going unnoticed "to avoid a situation where humans serve as sentinels and reveal infection in birds. The concern is, therefore, that the current surveillance is unable to provide a complete picture of the [highly pathogenic avian influenza] epidemiological situation in domestic birds and should be strengthened and improved in order to meet the challenge we are currently facing."

On 20 January, three Chinese government ministries issued a joint order for local health, agriculture and commerce offices to work together to improve surveillance and management of the country's live poultry markets, according to Xinhua, China's state news agency.

The government urged local offices to close live poultry markets in urban areas, if possible, or disinfect the markets daily if they cannot be shuttered. The offices were also ordered to conduct daily surveillance and reporting and collaborate when they detect the H5N1 virus.

Les Sims, a FAO consultant, says that although humans are once again acting sometimes as sentinels for infections in poultry, so far there is no evidence to support asymptomatic disease as the reason for absence of reported poultry outbreaks in China.

"Vaccination will alter the clinical appearance of disease if the flock is infected, but on a flock basis, some disease will be detected. Infection is not silent," he notes, adding that infected vaccinated flocks, for example, have lower mortality rates with fewer birds showing classical symptoms of the disease. "If vaccines are used, veterinary and medical authorities have to accept that one of the signals they used to rely on for detecting infection in poultry – high mortality – needs to be modified."

Infected poultry can still shed small amounts of the virus, even when the vaccine is a good match and the birds are vaccinated properly, says Sims. "This has always been the case and so can't explain the current situation in China."

The issue of less severe infections in vaccinated poultry is creating negative sentiments about the measure, according to Sims, but he says that China has maintained a close match between the circulating strains and the vaccine antigen, which greatly diminishes the viral load in poultry. "The benefits of vaccination in reducing viral load need to be considered and balanced against the changes in disease appearance that will occur if a vaccinated flock is infected. The situation in China would almost certainly be much worse if vaccination was not used."

Sims is not surprised that some poultry infections go undetected, given the size and make-up of China's poultry population, along with the modified appearance of the disease in vaccinated poultry. However, he suspects that under-reporting of the disease might be one factor that keeps the number of outbreak reports low. Farmers who raise poultry for their livelihood have little incentive to report the disease.

INDONESIA

New technology boost for bird flu surveillance

Indonesia plans to introduce a web- and USB stick-based veterinary reporting system developed in Bali to track and report avian influenza outbreaks. The system will complement FAO's existing Participatory Disease Surveillance and Response (PDSR) programme.

Bali-based software developer Mitrais has been commissioned by CSIRO Livestock Industries' Australian Animal Health Laboratory (AAHL) in Geelong, Australia, to deploy its *InfoLab Plus* web-based system initially to seven regional diagnostic laboratories. At a subsequent stage, Mitrais will also produce a USB memory stick version of the application, called *InfoLab Lite*, which can be used with any computer.

The *InfoLab* technology will allow all of Indonesia's 440 district agricultural offices, many of which are without Internet access, to upload standardised data from Internet points for an integrated country-wide view of the avian influenza situation. It is expected that the new system, which is currently being tested for user acceptance, will 'go live' for Indonesia's veterinary laboratories in June this year.

AAHL, a World Organisation for Animal Health (OIE) reference laboratory for avian influenza, commissioned Mitrais to develop a reporting engine for the *InfoLab Plus* application and adapt it to Indonesian conditions. The solution will replace a Microsoft Access reporting system, known as *InfoLab*, which "operated in a stand-alone environment, did not use standardised reporting and required manual editing of data to achieve consistency" according to AAHL project manager Peter Durr.

InfoLab Plus will support the Indonesian government's efforts to control avian influenza in poultry by complementing FAO's PDSR programme and its database which is operational in 32 local disease control centres (LDCCs). PDSR teams are active in over 330 districts throughout areas of the country affected by avian influenza.

Funding for the reporting system and the supporting IT infrastructure for Indonesia has been supplied principally by AusAID, the Australian agency for international development, with additional funding from FAO.

MOST RECENT HPAI OUTBREAKS 2006-09

Note: This list has been compiled on the basis of information up to 15 January 2009.

2009

January Bangladesh, Egypt, India, Indonesia, Nepal

2008

December Cambodia, China, China (Hong Kong), Viet Nam
November Thailand
October Germany, Lao PDR
September Togo
July Nigeria
June Pakistan
May Japan, Korea (Republic of), United Kingdom
April Russian Federation
March Turkey
February **Switzerland**, Ukraine
January Israel, Saudi Arabia

2007

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

2006

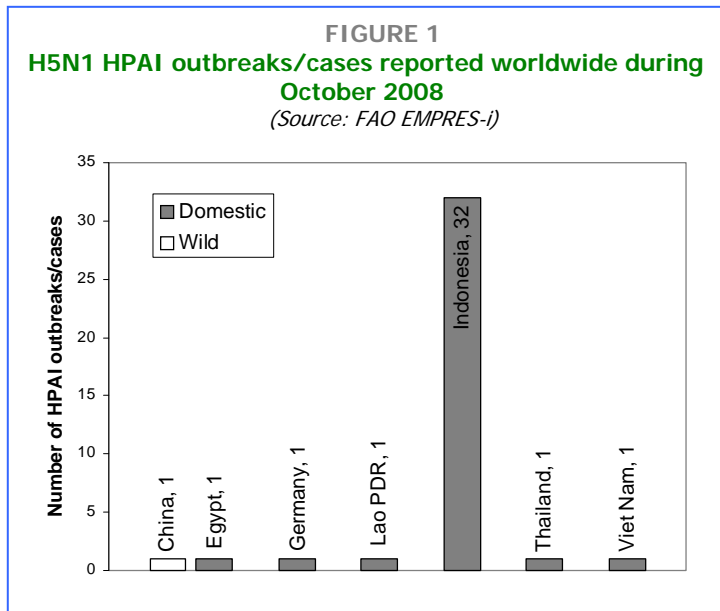
August Sudan
July **Spain**
June **Mongolia**, Niger
May **Bulgaria**, Burkina Faso, Denmark
April Djibouti, Sweden, West Bank & Gaza Strip
March Albania, Austria, Azerbaijan, Cameroon, **Croatia**, **Greece**, Jordan, Kazakhstan, Serbia, **Slovenia**
February **Bosnia-Herzegovina**, **Georgia**, Iraq,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

Green: wild birds only

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

This overview is produced by the FAO-GLEWS team, which collects and analyses epidemiological data and information on animal disease outbreaks as a contribution to improving global early warning under the framework of the Global Early Warning for Transboundary Animal Diseases (TADs) including Major Zoonoses. glews@fao.org

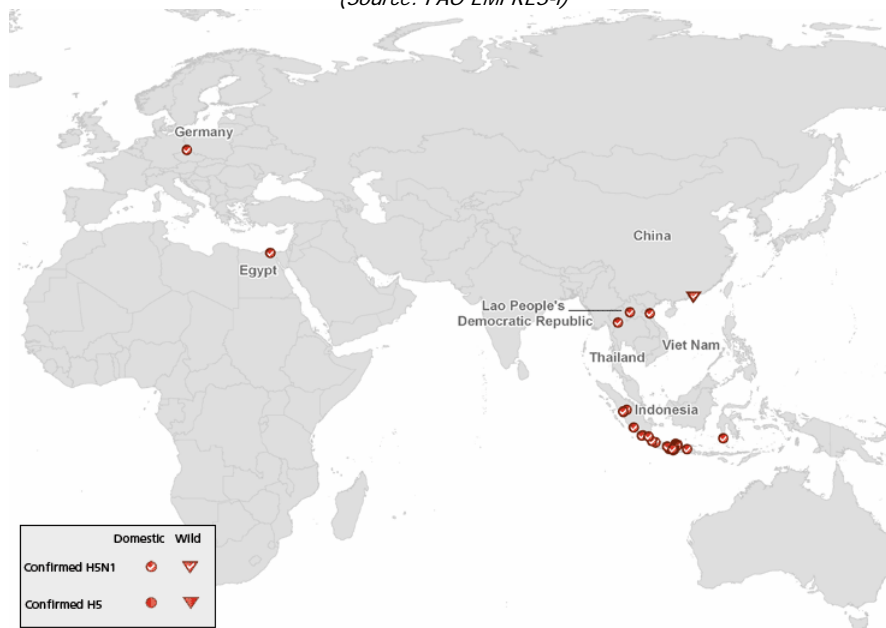
WORLDWIDE



Thirty-eight outbreaks/cases of H5N1 HPAI were reported officially worldwide in October 2008. Six countries (Egypt, Germany, Indonesia, Lao People's Democratic Republic (Lao PDR), Thailand and Viet Nam) reported a total of 37 outbreaks among poultry. Only China - Hong Kong SAR reported a case of infection in a wild bird. The numbers of reported outbreaks/cases by country and their geographical location are illustrated in Figures 1 and 2, respectively.

The evolution of the number of reported outbreaks/cases over the last six months by species group (wild or domestic) and by geographical area is represented in Figures 3 and 4, respectively. The evolution of the number of confirmed cases of H5N1 AI infections in humans reported to the World Health Organization (WHO) by country between November 2003 and 6 October 2008 is illustrated in Figure 5.

FIGURE 2
H5N1 HPAI outbreaks in poultry and cases of H5N1 infection in wild birds reported in October 2008
 (Source: FAO EMPRES-i)



NOTE: H5 cases are represented for countries where N-subtype characterization is not being performed for secondary cases or if laboratory results are still pending. Countries with H5 and H5N1 occurrences only in wild birds are not considered infected countries according to OIE status. The original data have been collected and aggregated at the most detailed administrative level and for the units available for each country.

FIGURE 3
Weekly numbers of H5N1 HPAI outbreaks in poultry compared with cases of H5N1 infection in wild birds reported between May and October 2008

(Source: FAO EMPRES-i)

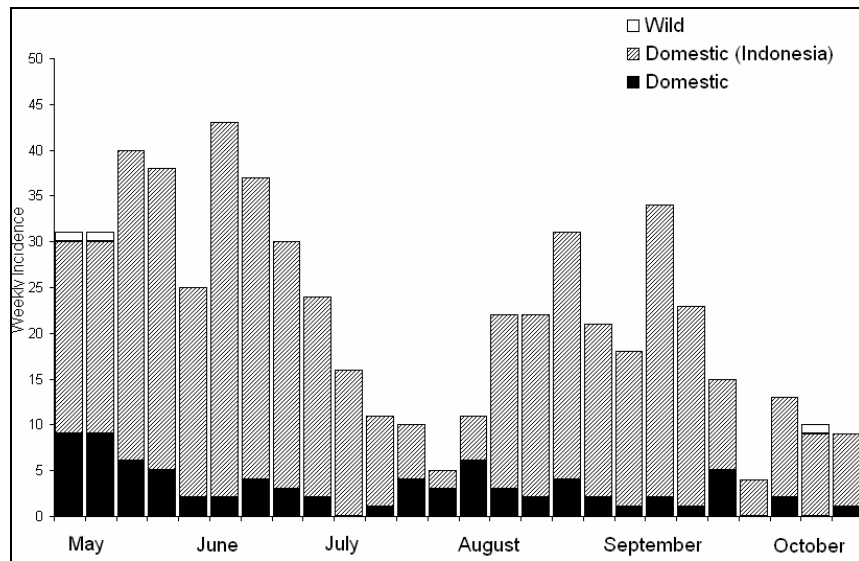


FIGURE 4
Weekly numbers of H5N1 HPAI outbreaks in poultry and cases of H5N1 infection in wild birds by geographical area reported between May and October 2008

(Source: FAO EMPRES-i)

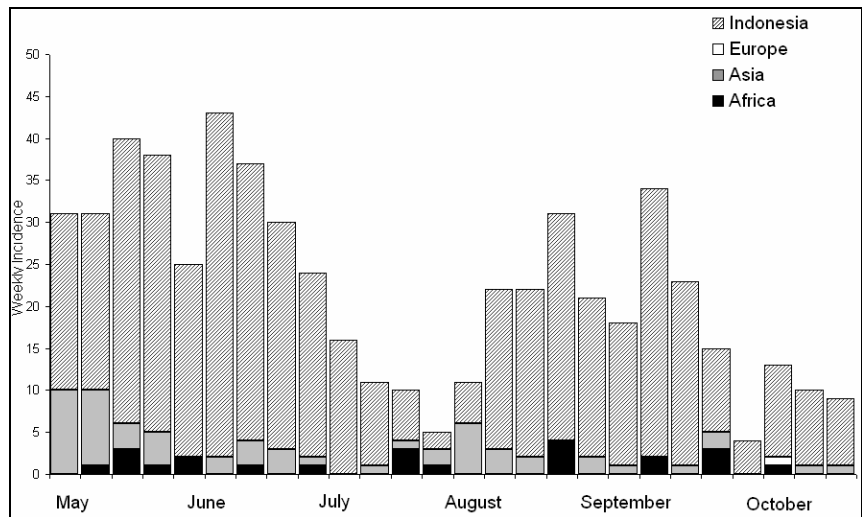
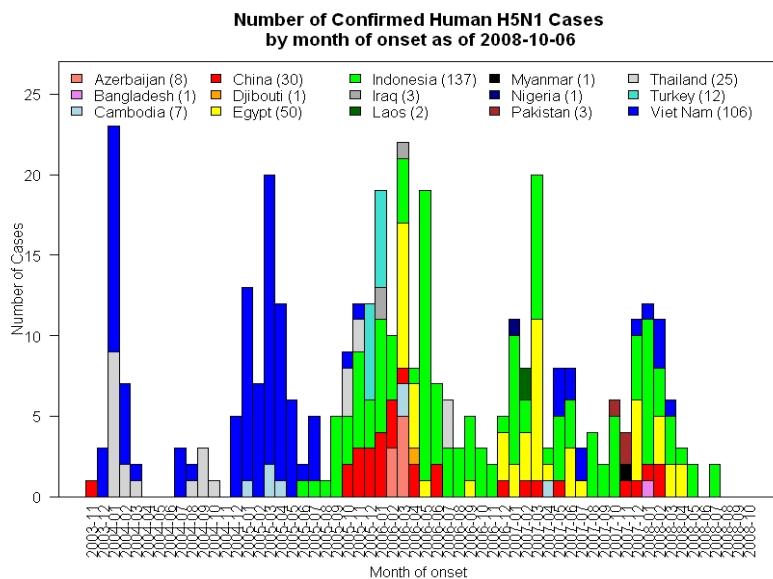
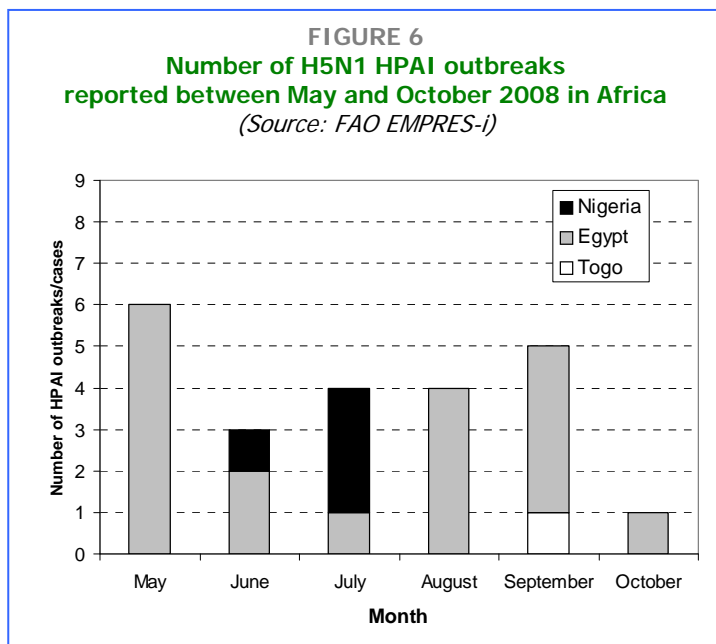


FIGURE 5
Confirmed cases of H5N1 AI infections in humans by country reported between November 2003 and 6 October 2008

(Source: World Health Organization)



SITUATION BY CONTINENT/REGION

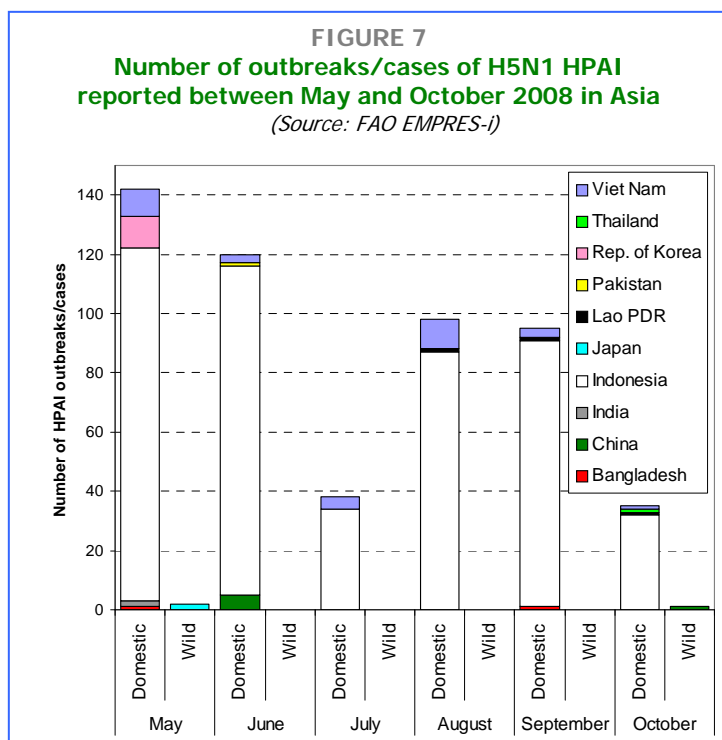


Africa

Confirmed outbreaks of H5N1 HPAI in Africa over the last six months are presented in Figure 6.

In **Egypt**, one H5N1 HPAI outbreaks was confirmed by the National Laboratory in backyard chickens during October 2008. The current government policy is to provide and deliver vaccine for Sector 4 poultry (household village poultry) and to permit commercial companies to vaccinate with a registered vaccine of their choice.

In **Nigeria**, after the re-emergence of H5N1 HPAI in June and July 2008, no additional disease events have been reported. No additional outbreaks of H5N1 HPAI have been reported in **Togo**.



Asia

Confirmed outbreaks/cases of H5N1 HPAI in Asia over the last six months are presented in Figure 7.

In **Bangladesh**, the H5 HPAI outbreak reported on 29 September 2008 in Naogaon District was confirmed as H5N1 in a report to the OIE. No H5N1 HPAI outbreak was reported in October 2008 throughout the country, although its HPAI status is believed to be endemic.

In **China (Hong Kong SAR)**, the Agriculture, Fisheries and Conservation Department (AFCD) reported that a dead house crow found and collected on 15 October 2008 at the refuge collection chamber in Sham Shui Po Park was confirmed to be H5N1 positive after a series of laboratory tests.

In **India**, the High Security Animal Disease Laboratory (HSADL) reported that a sample collected from a duck in West Bengal during targeted

surveillance carried out between 29 September and 19 October 2008 was found positive for antibodies to H5 avian influenza virus. This information was included in the report on surveillance/ testing of samples by the High Security Animal Disease Laboratory (HSADL), Bhopal, concerning notifiable avian influenza (H5 and H7) (<http://dahd.nic.in/flu/bfweekending19102008.pdf>). The other 6,948 samples collected during this period and tested so far (including 1,903 sera and 1,853 tissue samples from West Bengal State) were negative for antibodies to H5 avian influenza virus.

Another surveillance report covering the period between 20 October and 16 November 2008 found no seropositive birds. In total, 4,145 samples were received. Testing was completed on 3,674 samples and another 2,401 are under or pending testing. The report (available at <http://dahd.nic.in/flu/bfweekending30112008.pdf>) also includes the number of samples received and tested per state and the type of sample (whether serum or tissue).

Indonesia has experienced a high number of H5N1 HPAI outbreaks in poultry in the last three years. HPAI remains endemic on Java, Sumatra, and Sulawesi Islands with sporadic outbreaks reported from other areas. HPAI infection is considered to be established throughout most of Indonesia, although incidence varies widely. Only two of its 33 provinces have not experienced outbreaks of H5N1 HPAI. Regarding H5N1 avian influenza infections in humans, of the 137 confirmed cases reported to the WHO in Indonesia as of 10 September 2008, 112 have been fatal (case fatality rate: 82%). The high number of reported outbreaks monthly for Indonesia can be explained by the implementation of the 'participatory disease surveillance and response' (PDSR)¹ programme that targets village type poultry production systems (both backyard and small-scale intensive) and has been very effective at detecting evidence of virus circulation in the village environment. Utilizing participatory techniques to engage with poultry farmers, PDSR teams use an HPAI case definition combined with an influenza type A rapid test to identify cases of HPAI. The programme is supported by FAO and is operating in 331/448 districts through 31 local disease control centres (LDCCs) in 27 provinces in Java, Sumatra, Bali, Sulawesi and Kalimantan. Larger, less densely-populated provinces report HPAI outbreaks more infrequently than more densely populated provinces. It is likely that H5N1 HPAI is more sporadic in the smaller, more dispersed poultry populations.

During October 2008, PDSR surveillance and investigation reports were received from 1,547 villages in 331 out of 448 districts, in 27 out of 33 provinces. During October 2008, 32 (2.1%) infected villages were detected. As of 31 October 2008, 86.9% of surveyed villages were negative, 8.1% suspected, 3.3% controlled, and 1.6% infected. Over the past 6 months, 20.3% (11,435) of villages in the districts with PDSR activities have been visited. Of these, 567 (5.0%) villages were classified as infected at the time of their visit. Cumulative infection rates varied widely among provinces, but most were <5%. Focal culling was implemented in 27.9% of infected villages. Most (70.2%) of the PDSR surveillance and investigation activities were scheduled village visits, while the remainder were either in response to notifications from communities or the government (9.4%) or follow-up visits from previous activities (20.4%). As of 31 October 2008, and compared with the situation as of 30 September 2008, the proportion of non-infected villages increased and the proportion of infected villages decreased. Infected villages during October 2008 were concentrated in Central Java, but they were also scattered through Sumatra and some were present in South Sulawesi. No cases were reported in Kalimantan and Bali. Cases over the last six months have been most concentrated in Central Java.

Thailand reported an HPAI outbreak ten months after the last outbreak (January 2008). It started on 27 October in Village No 5, Tong Saleam, Sukhothai Province, killing five out of 17 native chickens. The whole genome sequencing and analysis for the isolates from Sukhothai conducted by the Department of Livestock Development (DLD) and Chulalongkorn University indicated that the isolates of H5N1 virus were the same as those from previous outbreaks in January 2008 reported in Pichit and Nakornsawan which belong to clade 1. Bacterial and parasitic infections were also documented in this case.

In **Lao PDR**, the National Animal Health Centre (NAHC) reported an H5N1 HPAI outbreak which started on 27 October 2008 and affected a mixed backyard flock (chickens and ducks) in Sayabouli District, Sayabouli Province. More than 7,500 poultry have been culled and about 1,200 eggs destroyed. Investigations are under way to establish the source of infection. In Lao PDR, active surveillance supported by FAO has been continuing since August 2007 and covers 72 districts (50% of all districts). In total, 68 live bird markets are monitored and sampled every second week, and 168 commercial farms (100% of all known commercial farms) are monitored monthly and sampled in case of decreased production parameters or increased mortality at least once every three months. Furthermore, FAO supports all active surveillance activities conducted in surveillance zones around outbreaks. Passive surveillance (reporting by village veterinary workers, village chiefs or farmers to provincial or district livestock offices) has also been supported by FAO since August 2007 in ten provinces. This activity allows provincial and district livestock staff to carry out immediate disease investigation including sampling after poultry mortality is reported. Lao PDR is also using an avian and human influenza hotline to receive reports on poultry mortality in the field (supported by CARE and the World Bank).

¹ *PDSR case definition in Indonesia: When poultry mortality events are encountered in which more than one bird died suddenly, with or without clinical signs, Participatory Disease Surveillance and Response (PDSR) teams carry out an influenza type A rapid test. A mortality event consistent with clinical HPAI and a positive rapid test in affected poultry is considered a confirmed detection of HPAI in areas where HPAI has previously been confirmed by laboratory testing.*

In **Myanmar**, results of active surveillance undertaken during the month of October 2008 in Bago (East), next to Yangon Division, indicated the presence of a large number of sero-positive healthy ducks. A total of 1,476 serum samples tested, 182 showed positive by HA/HI tests (12.3% positive). In particular, the positive ratio was high in two townships – Tanatpin (118/510=23.1%), and Waw (46/270=17 %) – respectively. The presence of seropositive healthy ducks in Tanatpin has been known since early 2007 when H5N1 virus hit Yangon and Bago Divisions and Mon State. For the time being, the government has placed these duck farms on high alert and under movement control (live ducks and their eggs are allowed to move only within the same township and consumed there). These ducks are raised in traditional ways, freely moving during day time and resting inside a simple hut at night along big canals. This is a typical minimum input duck raising system and not many biosecurity measures are in place. In Myanmar, the last case of H5N1 HPAI outbreak was in December 2007 in East Shan State, which shares a border with China (Yunnan Province) and Thailand (Chaing Rai Province). Village chicken and ducks were mainly affected. Active and clinical surveillance continues at high-risk and targeted areas including wetlands, where many migratory birds arrive and stay during winter, freely mingling with local poultry.

In **Viet Nam**, the disease is believed to be endemic and vaccination is being implemented throughout the country to assist with control. The second mass vaccination campaign of 2008 is under way. The official government decision for the 2009-10 vaccine strategy is expected in mid-November. Massive flooding in the north and centre of the country has made vaccine delivery campaigns difficult. Only one outbreak was reported in October compared to three outbreaks during September 2008. Under-reporting may partially account for the missing links in an ongoing chain of infection within the national poultry flock, giving the impression of 'sporadic' outbreaks. On 8 November 2008, the Department of Animal Health reported an H5N1 HPAI outbreak in the central province of Nghe An, which started on 31 October 2008 and affected a mixed poultry farm (ducks and chickens). According to the preliminary investigation, the flock had been vaccinated for H5N1 on 18 September 2008. However, an additional 450 unvaccinated 5-day-old ducklings were recently introduced into the farm, and they are believed to be the source of infection.

No H5N1 HPAI outbreaks/cases have been reported since May 2008 in the **Republic of Korea**, since June 2008 in **Pakistan**, and since May 2008 in **Japan** (in a wild bird).

Some other Asian countries regularly report the negative results obtained from their surveillance activities and suspected cases. **Bhutan**, which has not experienced any H5N1 HPAI outbreaks to date, produces a clinical surveillance report weekly in each administrative level (available at <http://www.moa.gov.bt/birdflu/main/reports.php?show=all>). **Cambodia**, where the last H5N1 HPAI outbreak was in April 2007, is using an animal health hotline activity to receive reports on suspicions or cases from the field. **Iraq**, where the last H5N1 HPAI outbreak was in February 2006, reported recent laboratory results of surveillance activities for October 2008 for all governorates except Kurdistan Province in the north of the country. All samples taken were negative for H5N1 [poultry farms (896), backyard poultry (989), game and wild birds (125), and markets and slaughterhouses (353)].

Europe

On 10 October, the OIE was notified of an H5N1 HPAI outbreak in **Germany** (Markersdorf Municipality, in Saxony, in the eastern part of the country, close to the Polish border). The affected holding had 800 geese, 550 ducks, 60 chickens and 24 turkeys. The detection was performed on samples taken on 7 October during routine investigation. The virus was shown to be highly similar to the strain detected in a tufted duck (*Aythya fuligula*) from the lake of Bautzen in 2006. Further analysis at the German National Reference Laboratory in Riems (Friedrich-Loeffler-Institut) of the H5 haemagglutinin of the virus isolated indicates a mixture of two clones. There were no movements of animals into or out of the concerned holding within the last 21 days. Investigations suggest a recent virus introduction probably *via* wild birds or staff. All clinical investigations of the 62 holdings in the protection zone were shown to be negative to H5N1.

On 15 October 2008, the **Russian Federation** authorities reported to OIE the occurrence of two H5N1 HPAI outbreaks that had occurred 20 months earlier. The causes of the delay in reporting are unknown. The first outbreak took place on 19 February 2007 among poultry at a market in Moskow in Moskovskaya Oblast. It affected 325 backyard poultry out of a population of 1,455. The second started on 23 December 2007 affecting 59 out of 5,455 backyard poultry in Severniy, Tselinny, Rostovskaya Oblast. The last reported case for H5N1 HPAI was in April 2008.

CONCLUSIONS

In addition to the H5N1 HPAI reports in three of the countries considered endemic (Indonesia, Viet Nam and Egypt), the disease reoccurred in domestic poultry (Germany, Lao PDR and Thailand) and in a wild bird in China (Hong Kong SAR) during October 2008.

As in the months of October in 2006 and 2007, reporting of HPAI activity was relatively low during October 2008 (Figure 9). Although there has been an improvement in disease awareness, outbreaks/cases of HPAI are still likely to be under-estimated and under-reported in many countries and regions because of limitations in the capacity of veterinary services to implement adequate and effective disease surveillance for poultry diseases such as H5N1 HPAI or Newcastle disease, which may affect significantly the number and the shape of the distribution of outbreaks by country and region. This may explain the considerable differences in the number of reported outbreaks between Indonesia and other endemic countries, which is probably due to the surveillance efforts implemented by the PDSR programme. However, this type of mainly active surveillance comes with a high cost that may be excessive for some countries. The variability and sensitivity in space and time of HPAI surveillance systems makes it difficult to draw correct conclusions on the results and performance of reporting by countries affected by H5N1 HPAI.

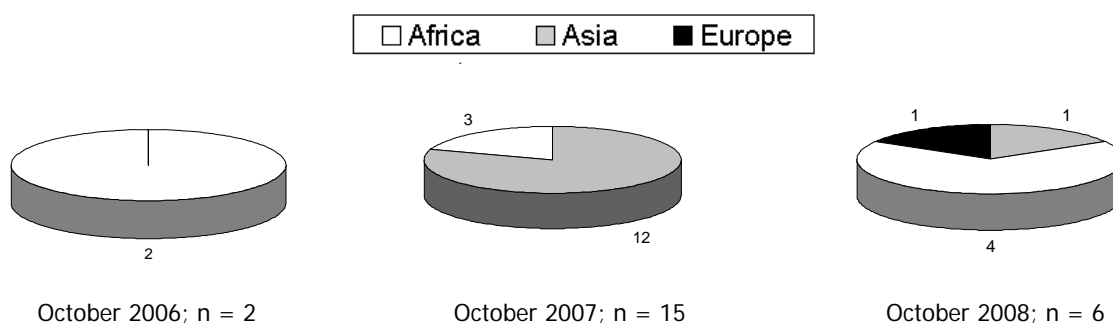
It is recommended that countries not only include their positive findings for H5N1 HPAI, but also the negative findings in poultry and wildlife, the number and location of samples analysed together with findings of differential diagnoses with Newcastle disease which is endemic in many areas where outbreaks of HPAI occurred.

In previous years, data from the approaching November-February period has shown a peak in number of outbreaks/cases in both poultry and humans. Therefore, an increase in the number of outbreaks reported in endemic countries is expected, as well as possible re-emergence in those countries where presence of the disease is suspected, but surveillance efforts may be inefficient/insufficient. Thailand is an early example of this tendency – it reported its first HPAI outbreak since January 2008 at the end of October.

FIGURE 9
Number and distribution by continent of H5N1 HPAI outbreaks/cases reported in October 2006, 2007 and 2008

(Source: FAO EMPRES-i, Indonesia data are not included, because the epidemiological unit definition for the PDSR data was modified from household level to village level in May 2008)

(Source: FAO EMPRES-i)



An animated map showing the evolution of outbreaks over the last six months including September 2008 is available at: www.fao.org/ag/againfo/programmes/en/empres/maps.html.

EMPRES welcomes information on disease events or surveillance reports on H5N1 HPAI (and other TADs), both rumours and official information. If you want to share any such information with us, please send a message to glews@fao.org.

This overview is produced by the FAO-GLEWS team, which collects and analyses epidemiological data and information on animal disease outbreaks as a contribution to improving global early warning under the framework of the Global Early Warning for Transboundary Animal Diseases (TADs) including Major Zoonoses.
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WORLDWIDE

Forty seven outbreaks/cases of H5N1 HPAI were reported officially worldwide in November 2008, all from poultry, in six countries (Bangladesh, Egypt, India, Indonesia, Lao PDR and Thailand). The numbers of reported outbreaks/cases by country and their geographical location are illustrated in Figures 1 and 2, respectively.

The evolution of the number of outbreaks/cases over the last six months by species group (wild or domestic) and by geographical area is represented in Figures 3 and 4, respectively. The evolution of the number of confirmed cases of H5N1 AI infections in humans reported to the World Health Organization (WHO) by country between November 2003 and November 2008 is illustrated in Figure 5.

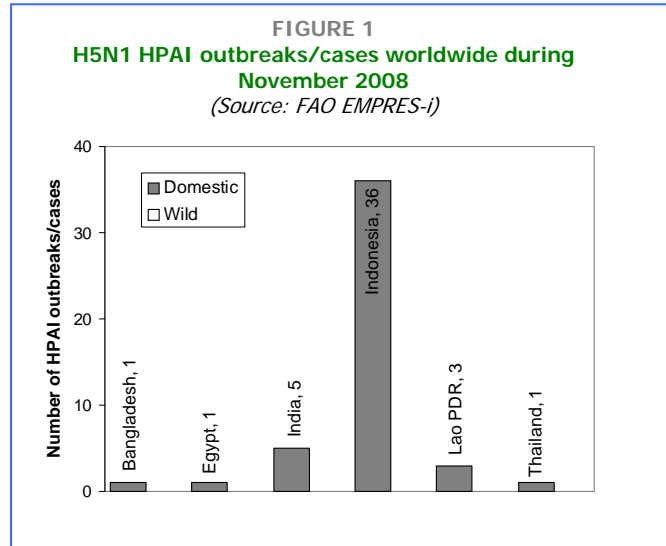
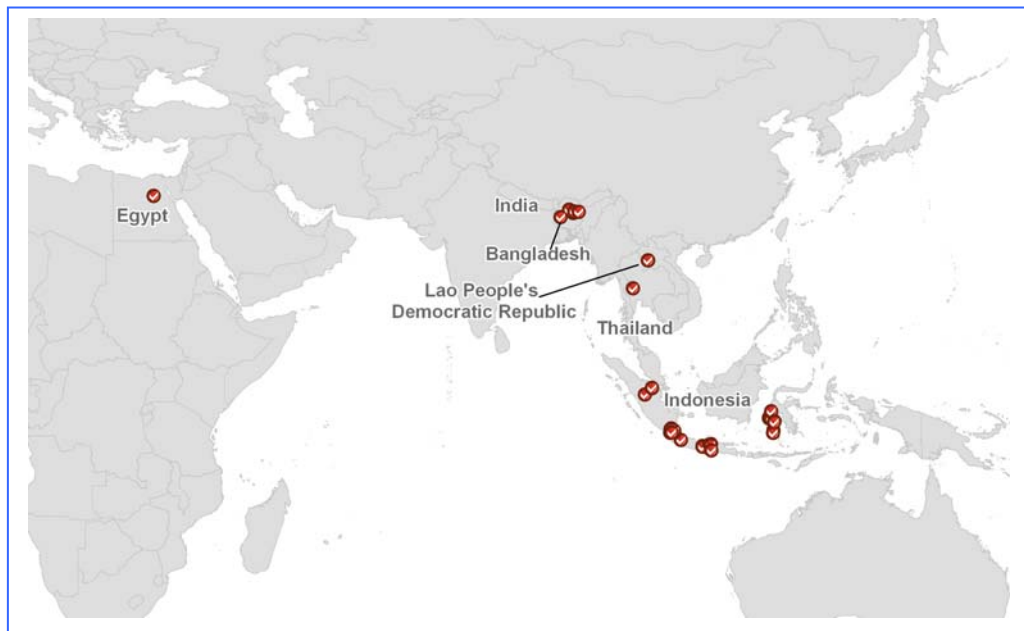


FIGURE 2
H5N1 HPAI outbreaks in poultry and cases of H5N1 infection in wild birds in November 2008
 (Source: FAO EMPRES-i)



NOTE: H5 cases are represented for countries where N-subtype characterization is not being performed for secondary cases or if laboratory results are still pending. Countries with H5 and H5N1 occurrences only in wild birds are not considered infected countries according to OIE status. The original data have been collected and aggregated at the most detailed administrative level and for the units available for each country.

FIGURE 3
Weekly numbers of H5N1 HPAI outbreaks in poultry and cases of H5N1 infection in wild birds between June and November 2008
(Source: FAO EMPRES-i)

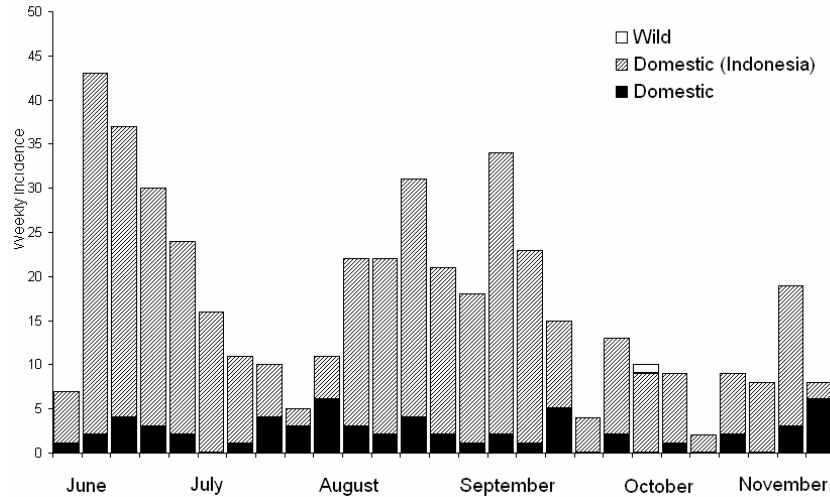


FIGURE 4
Weekly numbers of H5N1 HPAI outbreaks in poultry and cases of H5N1 infection in wild birds by geographical area between June and November 2008
(Source: FAO EMPRES-i)

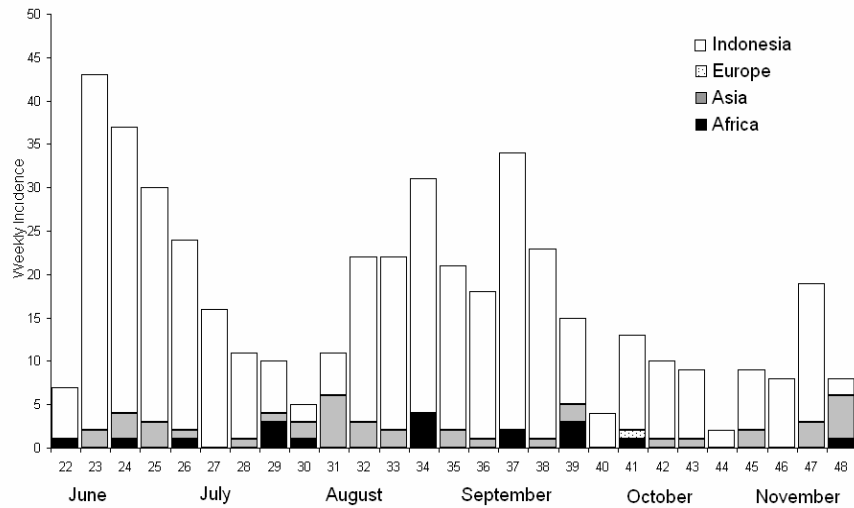
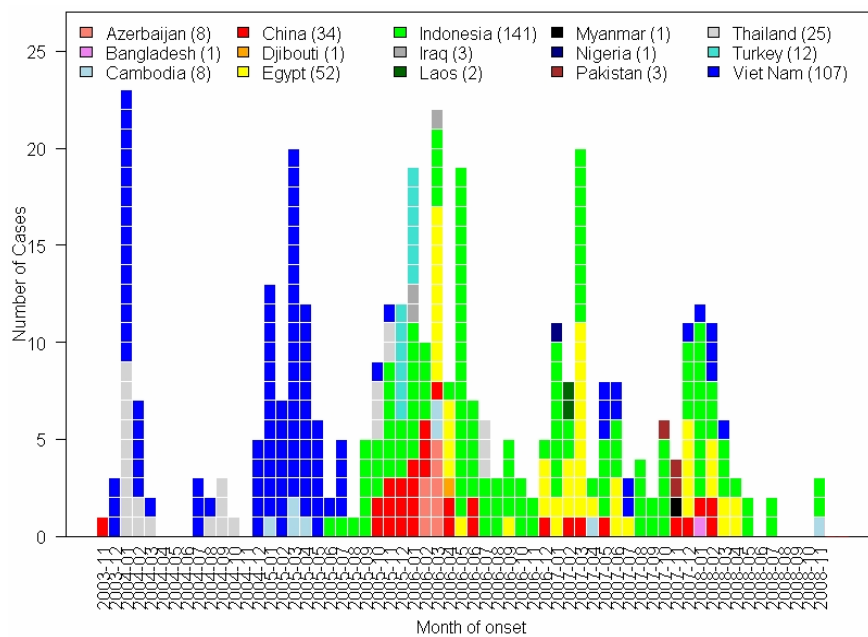


FIGURE 5
Confirmed cases of H5N1 AI infections in humans by country between November 2003 and November 2008
(Source: World Health Organization)



SITUATION BY CONTINENT/REGION

Africa

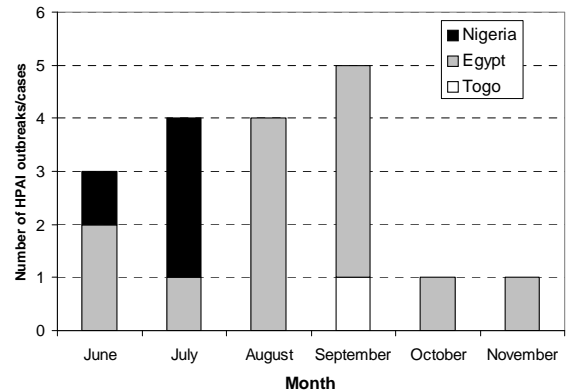
Confirmed outbreaks of H5N1 HPAI in Africa over the last six months are illustrated in Figure 6.

In **Egypt**, a country considered endemic, there was one outbreak in vaccinated backyard poultry in El Menia Governorate.

In **Nigeria**, after the re-emergence of H5N1 HPAI in June and July 2008, no additional disease events have been reported.

In **Togo**, no additional outbreaks of H5N1 HPAI have been reported.

FIGURE 6
Number of H5N1 HPAI outbreaks between June and November 2008 in Africa
(Source: FAO EMPRES-i)



Asia

Confirmed outbreaks/cases of H5N1 HPAI in Asia over the last six months are presented in Figures 7 and 8.

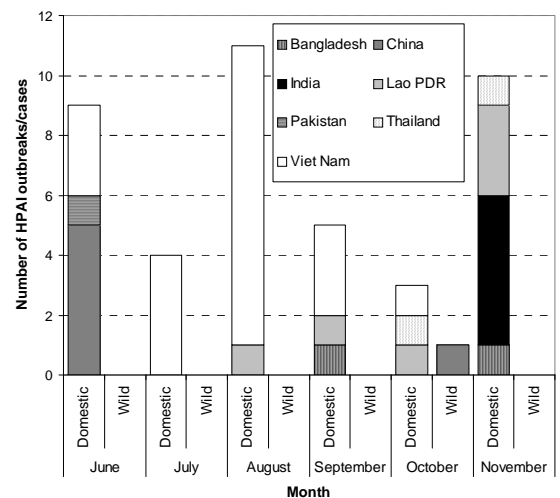
In **Bangladesh**, one HPAI outbreak occurred in a commercial farm in Rangpur District on 29 November 2008, two months after the previous outbreak. As of 1 December 2008, a total of 289 outbreaks had been recorded in 47 out of 64 districts. These include outbreaks in both commercial farms (247) and backyard (42). 1,637,847 birds had been culled as of 30 November 2008.

In **Cambodia**, the Ministry of Health announced a new human case of H5N1 AI infection in a 19-year-old male from Kandal Province. Of the eight cases confirmed in Cambodia, since 2005, seven have been fatal. The Ministry of Agriculture, Forestry and Fisheries Department of Animal Health and Production dispatched two investigation teams to the field. Over 300 poultry were culled at the Cambodia-Indonesia Solidarity Camp and surrounding area, where the patient had purchased chickens. Three duck samples were found positive for H5N1 virus. The zone was quarantined and poultry movements and raising in the area were banned.

Cambodia regularly reports the results obtained from its surveillance activities through an animal health hotline that receives reports on suspicions or cases from the field. Cambodia has not reported any H5N1 HPAI incidence (in poultry or humans) since April 2007.

In **India**, five villages reported HPAI outbreaks in backyard poultry in Kamrup, Barpeta and Nalbari Districts in the state of Assam at the end of November. It has been over five months since the last reported outbreak (15/05/08), although H5 seropositive ducks had been found during routine surveillance activities in previous months. The new outbreaks in India were detected in a new geographic area (Assam).

FIGURE 7
Number of outbreaks/cases of H5N1 HPAI between June and November 2008 in Asia.
(Source: FAO EMPRES-i)

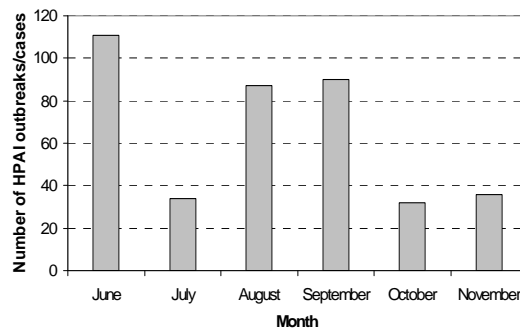


The two Indian laboratories involved in avian influenza diagnosis have carried out detailed sequencing of all previous virus isolates from 2006, 2007 and early 2008, all of which fall within clade 2.2 (the same as virus isolates from mid-2007 from Bangladesh). The current virus isolates from India are to be sequenced. During the period between 20 October and 30 November 2008, 8,457 samples were received at the High Security Animal Disease Laboratory (HSADL) in Bhopal. Testing was completed on 7,034 samples and another 3,353 are under test or pending for test. The report (available on-line at <http://www.dahd.nic.in/birdflue.htm>) also includes the number of samples received and tested per state.

Indonesia has experienced a high number of H5N1 HPAI outbreaks in poultry in the last three years. HPAI remains endemic on Java, Sumatra, and Sulawesi Islands with sporadic outbreaks reported from other areas. HPAI infection is considered to be established throughout most of Indonesia, although incidence varies widely. Only two of its 33 provinces have not experienced H5N1 HPAI. Regarding H5N1 avian influenza infections in humans, the Ministry of Health announced two new confirmed cases during November: a 9-year-old female from Riau Province who recovered, and a 2-year-old female from East Jakarta who died. Of the 139 cases confirmed to date in Indonesia, 113 have been fatal.

The high monthly number of reported outbreaks for Indonesia can be explained by the implementation of the PDSR¹ programme that targets village-type poultry production systems (both backyard and small-scale intensive) and has been very effective at detecting evidence of virus circulation in the village environment. Utilizing participatory techniques to engage with poultry farmers, PDSR teams use an HPAI case definition combined with an influenza type A rapid test to identify cases of HPAI. The programme is supported by FAO and is operating in 331/448 districts through 31 local disease control centres (LDCCs) in 27 provinces in Java, Sumatra, Bali, Sulawesi and Kalimantan. Larger, less densely-populated provinces report HPAI outbreaks more infrequently than more densely populated provinces. It is likely that H5N1 HPAI is more sporadic in the smaller, more space-dispersed poultry populations.

FIGURE 8
Number of outbreaks/cases of H5N1 HPAI between June and November 2008 in Indonesia
 (Source: FAO EMPRES-i)



During November, PDSR officers visited 1,545 villages (in 331/448 districts in 27/33 provinces) of which 36 (2.3%) were infected (Figure 8). This was similar to the reported October infection rate of 2.1%. Infected villages during November were fairly evenly distributed among Sumatra, Central Java and West Sulawesi. No cases were reported in Kalimantan or Bali. During the previous six months, PDSR officers had visited 11,814 villages in the 331 districts under PDSR surveillance. To date, 21.0% of villages under PDSR coverage have been surveyed. Slightly over four percent of all the villages visited during the previous six months were classified as infected at the time of visit. As of 30 November, and compared with the situation on 31 October, the percentage of infected, suspect and controlled villages decreased while the percentage of apparently free villages increased. Cases over the last six months were most concentrated in Lampung and Central Java Provinces.

In **Lao PDR**, after the HPAI outbreak in Sayabouli District in late October 2008, three more outbreaks were reported in villages in the same district. In Lao PDR, FAO supports active surveillance in 72 districts (50% of all districts). In total, 68 live bird markets and 100% of all known commercial farms (168) have been monitored and sampled. Passive surveillance is also supported by FAO in ten provinces. Furthermore, Lao PDR is using an avian and human influenza hotline to receive reports on poultry mortality in the field.

In **Thailand**, after reporting in October the first HPAI outbreak in ten months, a second occurrence was reported on 10 November 2008 in Uthai Thani in five native chickens. Genome sequencing and analysis indicated that the isolates of H5N1 virus were the same as those from previous outbreaks in January 2008, which belonged to clade 1.

In **Viet Nam**, although the disease is believed to be endemic, no HPAI outbreaks were reported during November. Vaccination is being implemented throughout the country to assist with control. The second mass vaccination campaign of 2008 is under way.

No H5N1 HPAI outbreaks/cases have been reported since May 2008 in **Japan** (in a wild bird), since June 2008 in **Pakistan**, and since October in **China** (Hong Kong SAR, in a wild bird).

Some other Asian countries regularly report negative results obtained from their surveillance activities and suspected cases. **Bhutan**, which has not experienced any H5N1 HPAI outbreaks to date, produces a clinical surveillance report weekly in each administrative level (available at

<http://www.moa.gov.bt/birdflu/main/reports.php?show=all>). **Iraq**, where the last H5N1 HPAI outbreak was in February 2006, reported recent laboratory results of surveillance activities for November 2008 for all governorates except Kurdistan Province, in the north of the country. All samples taken were negative for H5N1 [poultry farms (371), backyard poultry (241), game and wild birds (212), and markets and slaughterhouses (370)]. Poultry farms in Najaif, Wasit and Mosel were found infected with the low pathogenic strain of H9 avian influenza.

Europe

No HPAI outbreaks have been notified in the last six months other than the isolated October outbreak in a mixed poultry farm in **Germany**.

CONCLUSIONS

Since 2003, 61 countries have experienced outbreaks of HPAI H5N1. Effective control measures have been associated with reduced risk of human infections in several countries. However, HPAI H5N1 remains entrenched in poultry in parts of Asia and Africa and thus still poses a risk for human infections.

It is very difficult to carry out reliable epidemiological analysis of the situation of HPAI globally based only on official disease reporting, and knowing that prevalence and incidence are probably greater. During November 2008, two of the countries considered endemic (China and Viet Nam) reported no HPAI outbreaks. This raises questions about the effectiveness of the surveillance systems in place. In addition, Bangladesh, Cambodia, India, Lao PDR and Thailand seem to be experiencing and reporting re-infection.

As in November 2006, November 2008 showed quite low HPAI activity in terms of disease reporting (Figures 9 and 10). In November 2007, however, there was much HPAI activity. Although there has been an improvement in disease awareness, outbreaks/cases of HPAI are likely still under-estimated and under-reported in many countries and regions because of limitations in the capacity of veterinary services to implement adequate and effective disease surveillance for HPAI and other diseases. For this reason, it may be more meaningful to look at the number of affected countries (Figure 10) rather than at the number of outbreaks/cases reported (Figure 9). Nevertheless, the month of November has been particularly odd in the sense that two of the countries considered endemic did not report any HPAI outbreaks.

In the months to come, data from previous years have shown a peak in the number of outbreaks/cases when approaching the November-February period in both poultry outbreaks (Figure 7) and human cases. Therefore, an increase in the number of outbreaks reported in endemic and at-risk countries is expected, as well as possible re-emergence in those countries that reported outbreaks in the past. The re-emergence in Cambodia, India and Bangladesh this month and Thailand last month confirm this trend.

FIGURE 9

Comparison of number and distribution by continent of H5N1 HPAI outbreaks/cases between November 2006, November 2007 and November 2008.

(Source: FAO EMPRES-i; Indonesia data are not included, because the epidemiological unit definition for the PDSR data was modified from household level to village level in May 2008)

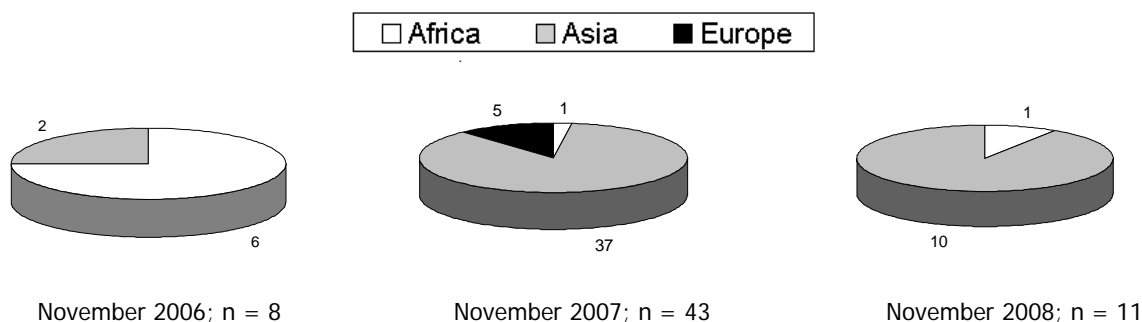
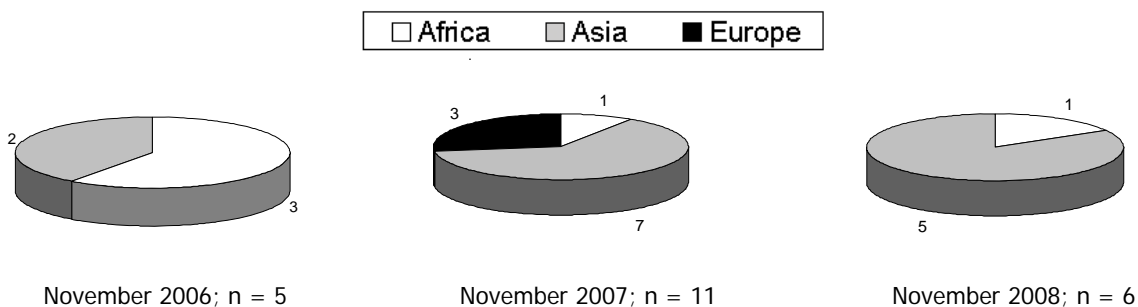


FIGURE 10

Number of countries affected with H5N1 HPAI by continent in November 2006, November 2007 and November 2008

(Source: FAO EMPRES-i)



An animated map showing the evolution of outbreaks over the last six months including November 2008 is available at: www.fao.org/ag/againfo/programmes/en/empres/maps.html.

EMPRES welcomes information on disease events or surveillance reports on H5N1 HPAI (and other TADs), both rumours and official information. If you want to share any such information with us, please send a message to glews@fao.org.

AT A GLANCE

The latest HPAI outbreaks for the period 14 November 2008 – 15 January 2009

Note

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

AFRICA

EGYPT

H5N1 HPAI was confirmed on 27 November 2008 in vaccinated backyard poultry in the village of Hod Elgazar, district of Beni Mazar, in El Menia Governorate.

H5N1 HPAI was confirmed on 25 December 2008 in vaccinated backyard poultry in the Abo Helal area of El Menia, in El Menia Governorate.

H5N1 HPAI was confirmed on 31 December 2008 in backyard chickens, ducks and geese in the village of Abgig, district of El Fayom, in El Fayom Governorate.

Samples from vaccinated backyard ducks and chickens in the village of Lengb, district of Ashmoun, in El Minūfiyah Governorate, tested positive for H5N1 HPAI on 9 January 2009.

Samples from ducks and chickens in the village of Kafr Abu Hegazi, Kerdasa District, tested positive for H5N1 HPAI on 13 January 2009.

NIGERIA

FAO reports that a total of 29,866 samples (including 584 from wild birds) were collected between October 2005 and October 2008, of which 305 tested positive for the H5N1 HPAI virus. Throughout 2008, only two HPAI outbreaks were reported (in the states of Kano and Katsina). However, targeted live-bird market surveillance carried out by FAO/Federal Department of Livestock in 11 states not affected by HPAI led to detection of positive cases in samples from the states of Gombe and Kebbi. Nigeria's National Veterinary Research Institute (NVRI) has confirmed HPAI in 97 local government areas in 25 states and the Federal Capital Territory since 2006.

ASIA

BANGLADESH

An outbreak of H5N1 HPAI that started on 29 September 2008 in commercial farm poultry in Imam, Chak Moktar, Naogaon Sadar, Noagaon, Rajshahi was reported to the OIE on 20 November 2008.

The government reported an outbreak of HPAI that started on 28 November 2008 (and was confirmed on 1 December 2008) in a flock of layer hens in the northern district of Rangpur.

On 14 December 2008, the Ministry of Fisheries and Livestock announced an outbreak of HPAI on a mixed (layers and broilers) farm in the district of Gazipur, although only layers were affected.

On 17 December 2008, an outbreak of H5N1 HPAI on a poultry farm in Shalida, Norsingdi, Dhaka, was reported to the OIE, and another outbreak was confirmed three days later on a layer farm in Singra Upazilla in the district of Natore.

On 22 December 2008, an outbreak of HPAI was confirmed in backyard poultry in Nazira Baltari, Kurigram, Rajshahi, and another outbreak confirmed two days later on a commercial poultry farm in Amtali, Chakirpashar, Kurigram, Rajshahi.

As of 15 January 2009, two outbreaks had been reported: the first on 5 January 2009 in Mirpur Sub-district, Dhaka, the second on 14 January 2009 in Kurigram Sadar Sub-district, district of Kurigram.

CAMBODIA

The Ministry of Agriculture, Forestry and Fisheries and FAO organised the culling on 17 December 2008 of ducks, chickens, turkeys and geese in the Cambodia-Indonesia Solidarity Camp and surrounding area in the village of Kraing Chek, district of Kandal Stung in Kandal Province after three samples from ducks in the camp had tested positive for HPAI. People in the villages of Tunsay Kiech and Kraing Chek have reported that poultry have been dying since October.

CHINA

On 16 December 2008, the Ministry of Agriculture confirmed outbreaks of H5N1 HPAI one week earlier in the province of Jiangsu: one in Xubei, Xunan, Dongtai, Yancheng City, and the other in Lingdong, Xinghe, Xihu, Hai'an, Nantong City. The virus strain was reported to differ from the strain found in the south of the country.

CHINA (HONG KONG SAR)

An outbreak of HPAI in an index farm in the Yuen Long District was reported to the OIE on 12 December 2008. According to the report, the farm had a compulsory avian influenza vaccination program and strict biosecurity measures in place. Unusual mortality was first noted in sentinel chickens on 8 December and culling was carried out the following day. Two days later, 17,960 chickens on a farm within the 3-km radius infected zone and poultry in a wholesale market (10,704 chickens, 2900 pigeons, 1,420 pheasants, 3,100 silky chickens and 370 chukars) were culled. Initial surveillance using PCR did not detect H5 in any other of Hong Kong's poultry farms, but they were advised to administer a booster vaccine.

INDIA

On 26 November 2008, India reported an outbreak of H5N1 HPAI five days earlier in backyard poultry in Hajo, Rajabazar, in the district of Kamrup, Assam State.

The Department of Animal Husbandry, Dairying and Fisheries (DAHDF) reported that during the period 17-30 November 2008, the High Security Animal Disease Laboratory (HSADL) in Bhopal tested 3,360 samples of which seven were positive for the H5N1 avian influenza virus (using PCR, RT-PCR and virus isolation).

DAHDF reported on 1 December 2008 that HPAI had been discovered in two villages: Patgaon in Rani Block and Sarpara in Rampur Block, both in the district of Kamrup, Assam State.

DAHDF reported on 4 December 2008 that HPAI had been discovered in two villages: Katajhar in Gobardhana Block, in the district of Barpeta, and Katla in Pachim Nalbari Block, in the district of Nalbari, both in Assam State.

On 10 December 2008, DAHDF confirmed media reports of HPAI outbreaks in: Nilibari Village in Sidli Block, district of Chirang; the Central Chick Rearing Farm, in Khanapara Village in Guwahati Municipality, district of Kamrup; Jalah Village, Bezera Block, in the district of Kamrup; and Ward No. 6, East Revenue Circle, in Dibrugarh Municipality, district of Dibrugarh.

H5 HPAI was confirmed on 15 December 2008 by DAHDF in two villages in West Bengal: Satghoria and Narhatta, in Englishbazar Block, district of Malda. H5 HPAI was also confirmed on 16 December 2008 by DAHDF in four new villages: Sariha Sakia in Bojali Block, district of Barpeta; Kheluwa Para Pt-II in Boltamari Block, district of Bongaigaon; Ward No. 37, municipality of Guwahati, district of Kamrup (Metro); and Jaipur in the municipality of Guwahati, district of Kamrup (Metro).

On 18 December 2008, the OIE was officially informed of an outbreak of H5N1 HPAI in rural backyard poultry on 13 December 2008.

In the first week of January 2009, outbreaks of H5N1 HPAI were confirmed in four districts in the state of Assam (Bongaigaon, Baksa, Kamrup and Nagaon), and of H5 HPAI in two villages in the Darjeeling District of the state of West Bengal (Bansdhura, Rangli Rangliot Block and Matigara, Siliguri).

INDONESIA

On 26 November 2008, FAO reported the results of its PDSR activities during October 2008. Reports were received from 1,547 villages in 331 out of 448 districts (in 27 out of 33 provinces): 32 (2.1%) infected villages were detected. As of 31 October 2008, 86.9% of surveyed villages were apparently free of the disease, 8.1% were suspected, 3.3% were controlled, and 1.6% were infected. Over the previous six months, 20.3% (11,435) of villages in the districts with PDSR activity had been visited: of these, 567 (5.0%) were classified as infected at the time of their visit.

As of 31 October 2008, and in comparison with the situation on 30 September 2008, the proportion of apparently free villages had increased. During October 2008, infected villages were concentrated in Central Java, but were also scattered throughout Sumatra and some were present in South Sulawesi. No cases were reported in Kalimantan and Bali. Cases over the previous six months were mostly concentrated in Central Java.

PDSR activities turned up 47 HPAI outbreaks during the month of November 2008.

In December 2008, PDSR activities were carried out in 1,106 villages of which 59 (5.3%) were infected, more than doubling the November 2008 infection rate of 2.3%. Between July and December 2008, PDSR officers visited 11,414 villages in 331 districts under PDSR surveillance, of which slightly over 4% were infected. As of 31 December 2008, and in comparison with the situation on 30 November 2008, the percentages of 'infected', 'suspect', 'controlled' and 'apparently free' villages remained practically unchanged. Infected villages during December continued to be fairly evenly distributed among Sumatra, Central Java and West Sulawesi. No cases were reported in Kalimantan or Bali. Cases between July and December 2008 were mostly concentrated in Lampung and Yogyakarta, while Central Java was less infected than in the previous 6-month cumulative period.

LAO PDR

On 21 November 2008, two outbreaks of HPAI were reported in the district of Sayabouli, province of Sayabouli (in Nator Noi and in Phonexay, Kongphanh).

THAILAND

The OIE was officially informed on 17 November 2008 of an HPAI outbreak among native chickens one week earlier in Village No 6, Thung Pho, Nong Chang, in the province of Uthai Thani.

VIET NAM

Two outbreaks of HPAI in the province of Nghệ An were reported to the OIE on 27 November 2008: (in Hong Thinh, Dien Hong, Dien Chau on 30 October 2008 and in Quynh Chau, Quynh Chao, Quynh Luu on 24 September 2008).

On 4 December 2008, the Department of Animal Health (DAH) reported an outbreak of HPAI in the village of Nghi Phong, district of Nghi Lộc, in the province of Nghệ An.

An outbreak of HPAI among unvaccinated Muscovy ducks was confirmed on 26 December 2008 in the hamlet of Tieb Bo, commune of Luong Son, Thai Bguyen City, 80 km north of Hanoi.

SUMMARY OF CONFIRMED HPAI OUTBREAKS (as of 15 January 2009)

Sources: OIE, European Commission (EC), FAO and national governments – WHO for human cases/deaths

Note: Highlighted countries indicate those in which there has been only one officially confirmed outbreak or occurrence

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	13 January 2009	Domestic poultry – wild birds	52 / 23
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	14 January 2009	Domestic poultry	1 / 0
Cambodia	12 January 2004	16 December 2008	Domestic poultry – wild birds	8 / 7
China	20 January 2004	9 December 2008	Domestic poultry – wild birds	34 / 22
China (Hong Kong SAR)	19 January 2004	8 December 2008	Wild birds	-
India	27 January 2006	6 January 2009	Domestic poultry	-
Indonesia	2 February 2004	12 January 2009	Domestic poultry – pigs (with no clinical signs)	139 / 113
Japan	28 December 2003	8 May 2008	Domestic poultry – wild birds	-
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 October 2008	Domestic poultry	2 / 2
Malaysia	19 August 2004	2 June 2007	Domestic poultry – wild birds	-
Mongolia	10 August 2005	5 June 2006	Wild birds	-
Myanmar	8 March 2006	23 December 2007	Domestic poultry	1 / 0
Nepal	8 January 2009	8 January 2009	Domestic poultry	0 / 0
Pakistan	23 February 2006	16 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	28 December 2008	Domestic poultry	107 / 52
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	1 January 2008	Domestic poultry	-
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	-

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	30 May 2006	Wild birds	-
Croatia	21 October 2005	24 March 2006	Wild birds	-
Czech Republic	27 March 2006	11 July 2007	Wild birds – domestic poultry	-
Denmark	12 March 2006	26 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	9 October 2008	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	16 December 2007	Wild birds – domestic poultry	-
Romania	7 October 2005	6 December 2007 (cat)	Wild birds – domestic poultry – cat	-
Russian Federation	15 July 2005	8 April 2007	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	7 July 2006	Wild birds	-
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	-

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