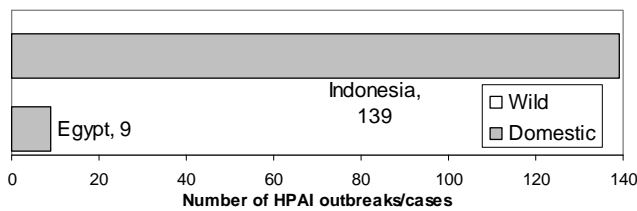


## WORLDWIDE SITUATION

One hundred and forty-eight outbreaks/cases of H5N1 HPAI in poultry were reported officially worldwide in July 2009. All cases were reported in domestic birds from two countries: Egypt and Indonesia. The number of reported outbreaks/cases by country and their location are illustrated in Figures 1 and 2, respectively.

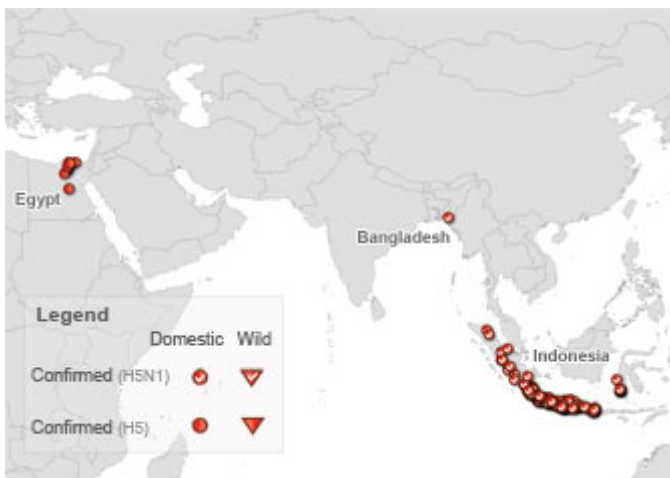
**FIGURE 1**

H5N1 HPAI outbreaks/cases reported in poultry and wild birds in July 2009  
(Source: FAO EMPRES-i)



**Figure 2**

H5N1 HPAI outbreaks/cases reported in poultry and wild birds in July 2009  
(Source: FAO EMPRES-i)

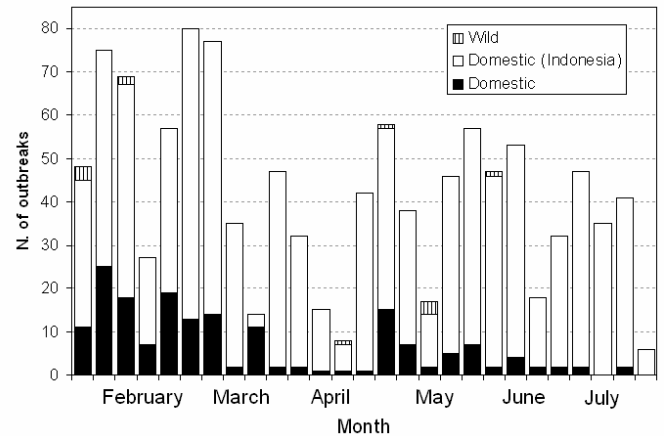


**NOTE:** H5 cases are represented for outbreaks where N-subtype characterization is not being performed for secondary cases or if laboratory results are still pending. Countries with H5 and H5N1 occurrences only in wild birds are not considered infected countries according to OIE status. The original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

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 July 2009 is illustrated in Figure 5.

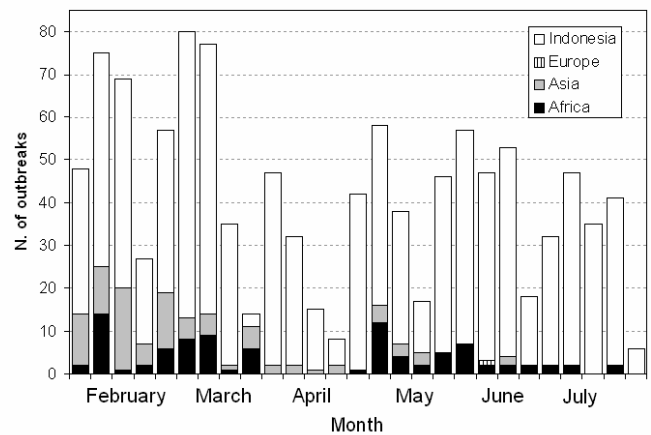
**FIGURE 3**

Weekly number of reported H5N1 HPAI outbreaks/cases in poultry and wild birds between February 2009 and July 2009  
(Source: FAO EMPRES-i)



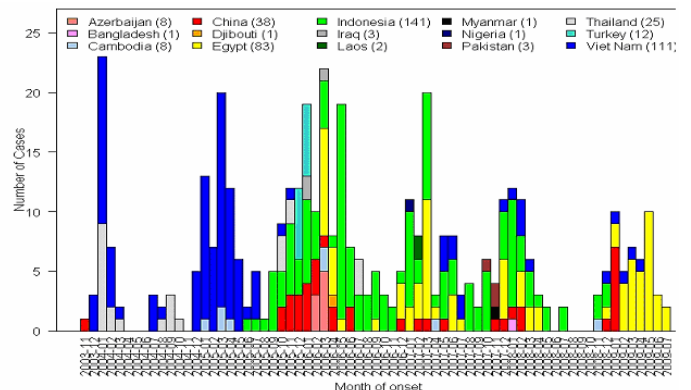
**FIGURE 4**

Weekly number of H5N1 HPAI outbreaks/cases reported by region between February 2009 and July 2009  
(Source: FAO EMPRES-i)



**FIGURE 5**

Confirmed cases of H5N1 AI infections reported in humans by country and month since November 2003  
(Source: World Health Organization)



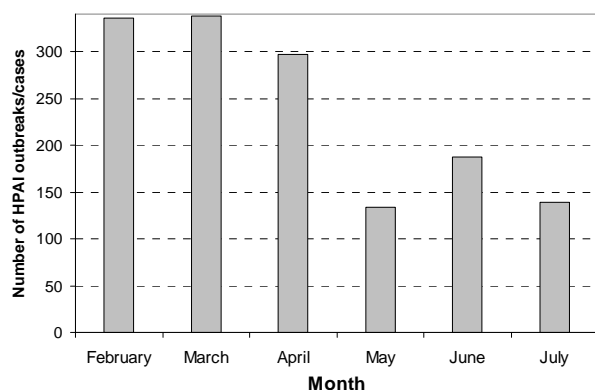
## SITUATION BY CONTINENT/REGION

### Africa

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

**FIGURE 6**

Number of reported H5N1 HPAI outbreaks in poultry in Africa between February and July 2009  
(Source: FAO EMPRES-i)



**Egypt**, which reported its first H5N1 HPAI outbreak in February 2006, is considered endemic with regular reporting of outbreaks in almost all of the 29 governorates. In July 2009, Egyptian veterinary authorities reported nine confirmed H5 HPAI outbreaks in poultry (chickens, ducks and geese) from Dakahlia (3), Fayoum (1), Qalubia (2), Sawhaj (1), Port Said (1) and Giza (1) Governorates. Seven outbreaks (78%) were reported in backyard poultry and two (12%) on farms. During July 2009, 17 participatory disease surveillance (PDS) teams visited 43 villages in seven governorates (Behaira, Sharkia, Gharbia, Dakahlia, Fayoum, Minufiyah and Qalubia). The teams detected eight suspected HPAI outbreaks, but only three (all in Dakahlia Governorate) were confirmed as HPAI H5N1 at the National Laboratory for Quality Control and Poultry Production (NLQP).

It is important to stress that most of the outbreaks (6) occurred in vaccinated birds, while for the other three, the vaccination status is unknown. An assessment study conducted in the framework of the SAIDR (Strengthening Avian Influenza Detection and Response) project revealed that the coverage of vaccination in household sector is very low (<20%) and the flock immunity level is also less than 10%.

Surveillance activities are being undertaken targeting both poultry and migratory wild birds around select important bird areas (IBAs) during winter. Poultry farms are required to test their birds and receive certification (HPAI infection negative status) prior to any planned transportation. During July 2009, 2,563 samples were collected for this purpose and one tested positive in Qalyoubia Governorate. Compliance with certification for poultry transportation is sub-optimal as only registered farms seek such services. In terms of surveillance on commercial farms during July 2009, active surveillance detected H5 HPAI infections on one farm in Qalyoubia Governorate (the only sample taken in the country), and passive surveillance detected no outbreaks (out of four farms in two governorates). In terms of surveillance in the backyard/household poultry sector, two households were confirmed positive in two governorates through active surveillance (out of 37 samples from seven governorates), and five samples in three governorates were found positive through passive surveillance (out of 20 samples from four governorates). Fourteen samples were also collected at road check points and none tested positive for HPAI.

The current government policy is to allow commercial companies to vaccinate their flocks with registered vaccines

of their choice. The government was providing vaccination of household/village birds free of charge. However, in recent weeks, vaccination in backyard/household settings has been provisionally suspended until a new vaccination strategy is adopted. This decision was made after three years of a mass avian influenza (AI) vaccination programme, with an apparently limited impact on disease incidence. Although there are no official vaccination data, especially from commercial farms, it is assumed that vaccines are widely used in the commercial poultry sectors. All AI vaccines used in Egypt are imported and there are at least 21; all inactivated and mostly the H5N1 Re-1 Chinese vaccine for household poultry and the H5N2 vaccine for commercial farms.

In July 2009, Egyptian health authorities confirmed two human avian influenza A/H5N1 cases from the governorates of Kafr El-Sheikh and Minufiyah in children aged 1.5 and 8 years. Both cases were reported to have had close contact with infected birds. Through July 2009, the total number of avian influenza A/H5N1 human infections in Egypt reached 83, of which 27 (33%) were fatal.

In **Ghana**, with regard to H5N1 HPAI active surveillance, 660 samples (538 swabs and 122 sera) collected between April and June 2009 were tested at the Accra Veterinary Laboratory. No H5 subtype was detected by conventional RT-PCR. Testing is still in progress to determine if other subtypes are present.

In **Togo**, during July 2009 there was only one alert on a commercial farm (sector 3) in the Central Area. All samples taken were negative for AI.

In **Nigeria** baseline surveillance activities for AI in ducks are expected to start before the end of the year.

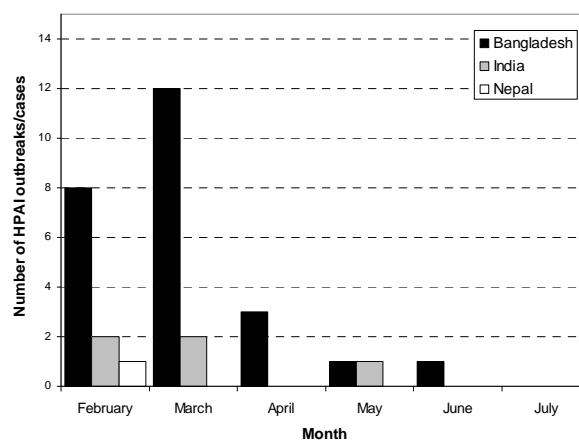
An active surveillance programme for AI in ducks will be organized under FAO's supervision in five countries previously infected with HPAI (Burkina Faso, Ghana, Cote d'Ivoire, Benin and Niger).

### South and Central Asia

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

**FIGURE 7**

Number of reported H5N1 HPAI outbreaks in poultry in South Asia, by country, between February and July 2009  
(Source: FAO EMPRES-i)



In **Bangladesh**, no H5N1 HPAI outbreak was reported during July 2009, the first month with no outbreaks since November 2008. However, with outbreaks of H5N1 HPAI reported almost every month since the first occurrence in February 2007, the country is still believed to be endemic. Poultry vaccination against H5N1 AI is prohibited by the government. As of 31 July 2009, a total of 325 outbreaks were recorded in 47 out of 64 districts on both commercial

farms and in backyard holdings and nearly 1.7 million birds had been culled. FAO is coordinating and supporting active surveillance that is currently conducted in 150 upazillas (sub-districts) across the country, including the innovative use of the Short Message Service (SMS) gateway (method of sending and receiving SMS messages between mobile phones and a computer) as a reporting tool. Daily, 450 community animal health workers employed by the active surveillance programme send SMS coded text messages to the Department of Livestock Services, reporting disease and death in poultry. SMSs messages of suspected AI events are automatically forwarded to the livestock officer in the area, who starts an investigation.

In **India**, no outbreaks were reported during June or July 2009. During July 2009, 10,025 active surveillance samples were received at the High Security Animal Disease Laboratory (HSADL), Bhopal. Testing was completed on 12,741 samples and another 1,686 were pending. The periodical reports (available on-line at <http://www.dahd.nic.in/birdflue.htm>) also include the number of samples received and tested per state. An Uttar Pradesh Wildlife Department project has collected about 240 samples since January 2009, mostly from migratory bird species. Another 150 wild bird samples have been submitted from samples collected at Chilika Lagoon, Orissa and Koothankulam Reserve, Tamil Nadu, from birds trapped as part of an FAO-facilitated satellite tag marking project ([http://www.fao.org/avianflu/en/wildlife/sat\\_telemetry\\_india.htm](http://www.fao.org/avianflu/en/wildlife/sat_telemetry_india.htm)). Samples are in the process of being tested at HSADL. The project is to continue for a three-year period.

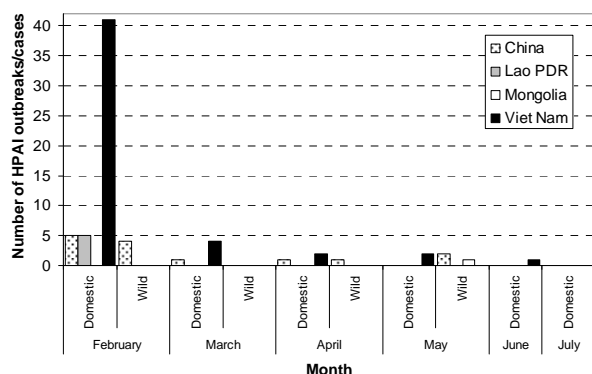
In **Nepal**, July 2009 was the fifth consecutive month with no HPAI outbreak reported. Measures taken seem to have succeeded in containing the disease to just one district (Jhapa). The major threat is to the intensive commercial production areas in the Central Region. From 20 February 2009 to 7 July 2009, commercial poultry farms and backyard poultry premises were visited for clinical surveillance 187 times and 111 times, respectively. From these poultry farms and premises 104 poultry carcasses, 760 tracheal swabs and 588 cloacal swabs were collected and submitted to the Central Disease Investigation Laboratory in Kathmandu for confirmation of the HPAI virus. In addition, 37 fresh faecal samples from live poultry markets were tested. All samples were found to be negative for the H5 HPAI virus. Similarly, 291 serum samples collected from ducks and poultry were tested, but no evidence of antibodies against H5N1 HPAI was found.

## South East Asia

Confirmed outbreaks/cases of H5N1 HPAI in South East Asia over the last six months are presented in Figures 8 and 9.

**FIGURE 8**

Number of H5N1 HPAI outbreaks/cases in poultry and wild birds in South East Asia, by country (excluding Indonesia), between February and July 2009  
(Source: FAO EMPRES-i)



In **Cambodia**, no additional H5N1 HPAI events have been reported since the human case and poultry outbreak reported in Kandal Province in December 2008.. Cambodia routinely reports results obtained from surveillance activities through two hotlines supported by FAO at the National Veterinary Research Institute (NaVRI) that receives reports on suspicious cases from the field as well as inquiries on how AI is transmitted, what are the prevention measures, etc. During July 2009, two callers reported sick and dying poultry, but after investigation, they were both ruled out as being H5N1 HPAI. There is also ongoing duck market surveillance in 12 live bird markets in 11 provinces conducted by NaVRI since 2007. None of the samples collected so far have tested positive for H5N1 HPAI. Wild bird surveillance conducted by the Wildlife Conservation Society in wetlands and markets also yielded negative results as tested by NaVRI

In **China**, since 2004, almost 200 H5N1 HPAI outbreaks have been reported in poultry and wild birds in 29 provinces and a total of over 35 million poultry have been culled to control the spread of the disease. No outbreaks were reported in July 2009. During the winter 2008-2009 (December - April), surveillance activities found 86 H5N1 HPAI positive samples from chickens, ducks and geese at markets in the administrative divisions of Chongqing, Fujian, Guangdong, Guangxi Zhuang Autonomous Region, Guizhou, Henan, Hubei, Hunan, Inner Mongolia Autonomous Region, Jiangsu, Shandong, Sichuan, Xinjiang Uyghur Autonomous Region and Zhejiang. The Official Veterinary Bulletin released by the Ministry of Agriculture covering surveillance activities in the month of May 2009 shows that no new viruses were detected during that period.

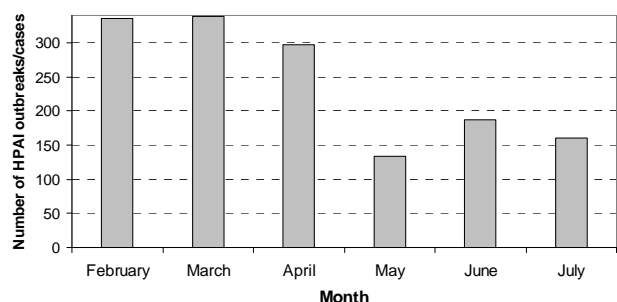
Vaccination has been an important strategy for controlling HPAI since 2004. On mainland China, vaccination coverage officially reported is still very high in all provinces. Mean vaccination coverage through September 2008 is reported to be higher for most provinces than for the same period in 2007. Additionally, all but one province, Xinjiang, reported 80% vaccination coverage or higher. Some of the current challenges are that 1) the current commercially used H5N1 inactivated vaccines do not allow for serological distinction between vaccination and field infection; 2) it is difficult to access poultry raised on backyard and small-scale farms; 3) vaccination coverage in domestic waterfowl is relatively low; 4) layer and breeder ducks in particular, since they do not show clinical signs, are often only vaccinated when they are young, but no booster vaccination is administered on most farms; and 4) broilers are usually not vaccinated because of the 4-6 weeks at the time of marketing.

**Indonesia** continues to report a high number of H5N1 HPAI outbreaks in poultry (Figure 9), as it has for the past three years. HPAI is confirmed to be endemic on the islands of Java, Sumatra and Sulawesi, and probably Bali, with sporadic outbreaks reported elsewhere. HPAI prevalence by village varies widely. Only two of Indonesia's 33 provinces have never reported the occurrence of H5N1 HPAI. The high number of reports each month is partially explained by the implementation of the 'participatory disease surveillance and response' (PDSR)\* programme that targets village poultry production systems (mainly backyard) and reports evidence of virus circulation in the village. The programme is supported by FAO with USAID and AusAID financial support and is operating in 331 of 448 (74%) districts through 31 Local Disease Control Centres (LDCCs) in 27 (82%) of 33 provinces in Java, Sumatra, Bali, Sulawesi and Kalimantan, including all known endemic areas. Larger and less densely-populated provinces report HPAI outbreaks less often than more densely populated provinces.

\* In the event that more than one bird dies suddenly in a flock, 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.

FIGURE 9

Number of reported outbreaks/cases of H5N1 HPAI in poultry in Indonesia, between February and July 2009  
(Source: FAO EMPRES-i)



During July, PDSR officers visited 2,129 villages, of which 159 (7.5%) were infected (139 were newly found, while the remaining twenty carried over the infection status from the previous month). This was similar to the June 2009 infection rate of 7.1%. During the previous 6 months, PDSR officers visited 10,737 villages (16.6%) in the 331 districts under PDSR surveillance. Since May 2008, they have visited about 34% of villages under coverage. An average of 14.1% of the villages visited during the previous six months were classified as infected at the time of visit. Bali continued to have infected villages. Cases over the last six months were concentrated in provinces on Java (especially DI Yogyakarta) and Sulawesi islands other than Gorontalo and North Sulawesi Provinces.

Soon after H5N1 HPAI was identified in 2003, large commercial poultry producers implemented vaccination using a range of vaccines, both imported and locally produced. The Indonesian Government introduced vaccination against H5N1 HPAI in mid-2004 as one of the measures aimed at controlling the epidemic in small flocks of poultry. Vaccines containing either an Indonesian H5N1 antigen (A/chicken/Legok/2003) or H5N2 viral antigen have been used in government programmes, and there are now approximately 20 different vaccines containing a variety of influenza strains licensed for use in Indonesia. The government's policy was that vaccine and vaccination services would be provided free of charge to the backyard poultry sector, layer farms up to 10,000 birds, and broiler farms up to 15,000 birds in all affected provinces. However, because of limited operational funding for vaccination activities, vaccine coverage was limited. In 2006 and 2007, due to limited funding, vaccine distribution was focused on the backyard sector in twelve high-risk provinces. As a result of concern over the efficacy of currently registered vaccines against circulating field strains, the central government did not purchase vaccines in 2008. In the commercial sectors, vaccination is not coordinated by government, thus vaccination practices in these sectors are based on risk as perceived by the farmer. Today, preventative vaccination is practiced in all breeder facilities and nearly all layer farms nationwide. Single dose vaccination of broilers with inactivated vaccine is practiced sporadically during the wet season on Java. Vaccination of ducks is not practiced.

In July 2009, for the fifth consecutive month, **Lao People's Democratic Republic** reported no H5N1 HPAI outbreaks.

In **Viet Nam**, no H5N1 HPAI outbreak was reported during July 2009. Since the beginning of 2009, the Department of Animal Health (DAH) officially reported 52 HPAI outbreaks in 15 (24%) of 63 provinces, mostly on duck farms (65%) and in the small scale commercial sector (69% of outbreaks on flocks with 50 to 1,000 birds). Consistent outbreak investigations are still not undertaken on infected farms and key information is usually missing from the field, so that it is difficult to have a good understanding of the way the virus is spreading throughout widely distributed regions of the country.

Disease control measures include stamping out of infected farms, movement restrictions for 21 days, compensation (up to 70% of market value; around USD 1.3/bird) and vaccination. Vaccination is implemented throughout the country in two annual campaigns (March/April and October/November), but in some areas, vaccination between the seasonal campaigns is also being practiced. By the end of the April-May seasonal vaccination campaign, 154.4 million poultry had been vaccinated (70.9 million ducks and 83.5 million chickens) as reported by the DAH. Recently the DAH changed the vaccination regulation, with full financial support now available for vaccination of commercial flocks below 2000 head/flocks (instead of 500 previously applied).

Post-vaccination monitoring is routinely carried out after each campaign. For 2009, a total of 50,400 samples are to be collected in 28 provinces for sero-monitoring and about 19,200 swab samples are to be taken to monitor HPAI virus circulation in slaughter-houses/-points or in live bird markets of 16 provinces. The analysis of the samples collected after the first round of 2009 vaccination is currently being done. Results for 2008 showed that around 65% of birds were protected, while between 75% and 80% of flocks were protected, i.e. flocks with more than 70% of birds showing protective titres  $HI \geq 1/16$ . However, it is likely that sampled flocks are not really selected at random for administrative reasons, so this assessment of the vaccination programme is more a monitoring of the immune response on vaccinated flocks rather than a monitoring of the vaccine coverage.

Active surveillance for AI is a component of numerous projects currently being implemented in Viet Nam, including:

ACIAR (Australian Centre for International Agricultural Research) project started in June 2006 for 3 years and includes longitudinal studies to determine the prevalence of past and present infection in small holder farms in the Mekong River Delta-South Viet Nam (on-going).

NZAID (New Zealand's International Aid & Development Agency) project will run for 2 years and includes longitudinal studies on nomadic ducks in the Mekong River Delta-South Viet Nam (on-going).

CIRAD (French Agricultural Research Centre for International Development) project started in 2007 and includes epidemiological studies in the Red River Delta-North Viet Nam (on-going).

VAHIP (Vietnam Avian and Human Influenza Control and Preparedness Project) project is being funded by the World Bank for 3 years and includes various surveillance activities, including market surveillance for virus circulation and outbreak investigations (on-going).

UNJP (Joint Government - United Nations Programme) project was implemented by FAO Viet Nam in 801 communes of ten pilot provinces to monitor the duck and chicken population at village level on a monthly basis. About 17.8 million birds have been under clinical observation during the 6 months of project implementation and an average mortality rate of 1.18% was observed, but no HPAI outbreak was detected in these targeted communes.

USAID (United States Agency for International Development) project by FAO Viet Nam in seven pilot provinces focuses on strengthening the reporting system at district and provincial level. This project has been implemented for five months (on going).

Based on the monitoring of surveillance activities, three currently circulating virus clades have been isolated: 1) HA clade 1 (predominant in southern Viet Nam and also isolated in Cambodia); 2) HA clade 2.3.4 (predominant in northern Viet Nam and also circulating in China); and 3) HA clade 7 (detected in poultry seized at the Chinese border and at markets near Hanoi). So far in 2009, ten viruses isolated from outbreaks have been sent to the U.S. Centers for Disease Control and Prevention (CDC) for sequencing, and to date, no new circulating clade has been detected.

No human cases were reported in July, leaving the figure at five human cases confirmed in 2009 (of which one recovered). Since the beginning of the epidemic in late 2003, Viet Nam has declared 111 human cases, of which 56 (50%) have been fatal.

**Europe**

The last case in Europe was reported in wild birds on the coast of Ubsu-Nur Lake, Ovursky, Respublika Tyva, which lies on the border with Mongolia. The last H5N1 HPAI event in poultry was detected in October 2008 on a mixed poultry farm in Germany.

**Non-infected countries/territories**

There have been no HPAI outbreaks reported in **Australia, New Zealand, the Pacific Community, Papua New Guinea** (outbreaks have occurred in the Indonesian province of West Papua) or **the Philippines**. To date, no outbreaks have been reported in **Timor-Leste**, but here surveillance capacity is weak. In South Asia, **Sri Lanka, Maldives, and Bhutan** have not experienced disease. Some Asian countries regularly report negative results obtained from their surveillance activities and suspected cases. **Bhutan** produces a clinical surveillance report weekly for each administrative level (available at: <http://www.moa.gov.bt/birdflu/main/reports.php?show=all>).

**CONCLUSIONS**

Since 2003, 62 countries/territories have experienced outbreaks of H5N1 HPAI. Effective control measures for outbreaks in poultry have been associated with reduced incidence of human infections in several countries. However, H5N1 HPAI remains entrenched in poultry in parts of Asia and Africa (Egypt) and thus the risk of human infection remains, as suggested by the two human cases reported in Egypt in July 2009.

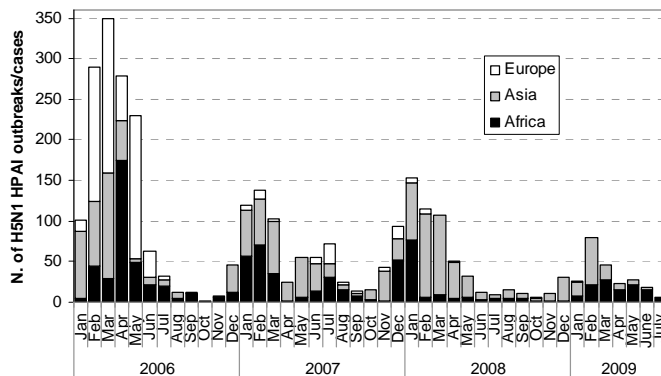
Data from previous years have shown a peak in the number of outbreaks/cases during the January-March period in both poultry outbreaks (Figure 12) and human cases (Figure 5) with February 2009 representing the peak. A secondary peak has been shown in 2007 and 2008 during the June-August period. This year it has not yet been observed, but the number of outbreaks has actually continued the decreasing trend that started in March 2009. In fact, for the first time in years, only two countries (Egypt and Indonesia) have reported HPAI outbreaks during the reporting period, while countries considered endemic such as Viet Nam, Bangladesh and China have not reported any H5N1 HPAI activity during July 2009. However, we will need to wait a few more months to see if the trend continues before we can consider these countries to no longer be endemic. The disease seems to be under control in those countries that experienced a re-emergence of HPAI over the last few months, i.e. Cambodia, India, Lao People's Democratic Republic and Nepal. It remains unknown whether these new cases occurred because of the re-introduction of the infection, or the undetected circulation of the virus at a low level. HPAI prevalence and incidence are likely to be much higher than presented in this report, because variations in the quality of disease surveillance and outbreak investigations in affected countries and areas preclude a thorough epidemiological analysis of global H5N1 HPAI.

In the case of Egypt, the situation in terms of human infections seems to be worsening since last year. There have been 30 human cases, which compares to seven human cases during the same period in 2008. However, the situation seems similar in terms of poultry outbreaks (118 in 2009 compared to 104 during the same period in 2008).

**FIGURE 10**

Number of reported H5N1 HPAI outbreaks/cases by continent, by month since January 2006

(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 and is not comparable)



July 2009 showed similar activity when compared to July 2008, both in terms of affected countries (2 vs. 4 - Figure 11) and number of outbreaks (9 vs. 9 - Figure 12). When compared to July 2006 and July 2007, however, H5N1 HPAI activity seems to be much lower in July 2009. 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 sensitive and effective disease surveillance for H5N1 HPAI, and because of the weakness of compensation schemes.

**FIGURE 11**

Number of countries by continent that reported H5N1 HPAI in July 2006, 2007, 2008 and 2009 (Source: FAO EMPRES-i)

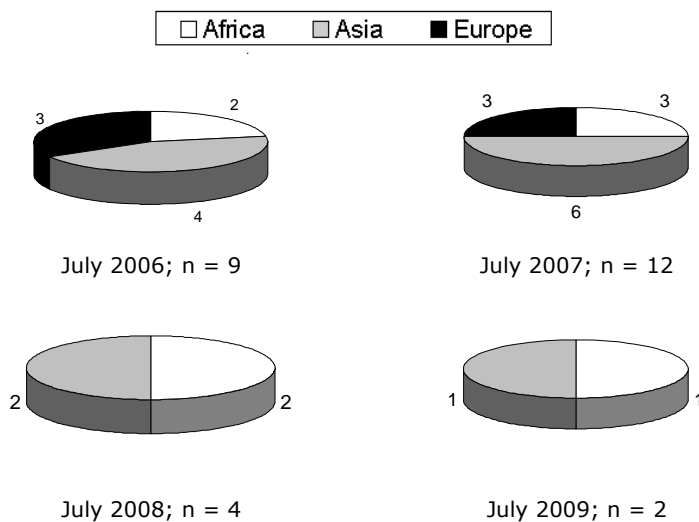
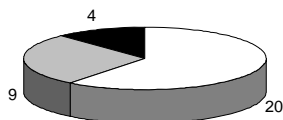


FIGURE 12

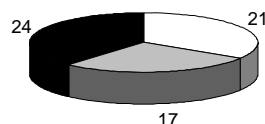
Number and distribution of H5N1 HPAI outbreaks/cases by continent in July 2006, 2007, 2008 and 2009

(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 and is not comparable)

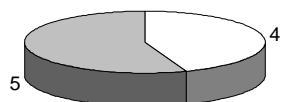
□ Africa    □ Asia    ■ Europe



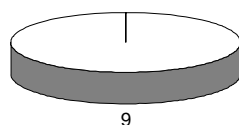
July 2006; n = 33



July 2007; n = 62



July 2008; n = 9



July 2009; n = 9

In May 2009, 107 great crested grebes, 3 bar headed geese and 11 brown headed gulls found dead in Genggahu Lake, Hainan Prefecture, Qinghai, tested positive for the H5N1 AI virus. Later on that month, another 163 dead wild birds were found in Nanhai Prefecture, also in Qinghai, at around the same time as a migratory swan was found dead in Mongolia (Doitiin Tsagaan Lake, Ugii-nuur Soum, Arkhangai). In June 2009, 58 great crested grebes *Podiceps cristatus* were found in Ubsu-Nur Lake, Ovursky, Respublika Tyva, which lies on the border with Mongolia. These reports seem to follow a similar pattern that occurred in South East Asia and southern Siberia in Russia in 2006. In 2006, these reports marked the start of a wider dissemination of H5N1 AI to many countries across Europe and Asia.

The ACIAR (Australian Centre for International Agricultural Research) project aimed to clarify the role that domestic ducks play in the maintenance of HPAI. Temporal patterns of HPAI antibodies and H5 virus among farmed ducks and in-contact chickens were monitored at bi-monthly intervals in Viet Nam (80 household flocks in Mekong Delta) and Indonesia (96 household flocks in Central Java) over 12 months from early 2007. Blood samples were tested using the haemagglutination inhibition test to detect H5 antibodies in unvaccinated birds and to monitor immunity in vaccinated birds. In Indonesia, the pooled bird-level prevalence of protective antibodies (HI titre  $\geq 16$ ) varied between samplings from 1.8 to 3.9% in unvaccinated ducks and from 0.1 to 3.1% in unvaccinated in-contact chickens. HPAI outbreaks were frequent and caused high mortality in chickens, showing that in Indonesia, birds are highly susceptible to HPAI infection. In Viet Nam, bird-level seroprevalence ranged from 4.4 to 33.2% in unvaccinated ducks and 6.8 to 22.1% in unvaccinated in-contact chickens, while 37.6-78.5% of vaccinated ducks and 24.3-83.7% of vaccinated in-contact chickens had protective titres. No HPAI outbreaks were observed. These findings suggest that in Viet Nam, despite incomplete protection from HPAI vaccination, a substantial proportion of birds are protected from severe illness due to HPAI. Although substantial proportions of reportedly vaccinated birds did not have protective antibody titres, this should be interpreted with caution, because of difficulties in recording vaccination status. More information can be found in Henning *et al.* 2009. *Prevalences of Highly Pathogenic Avian Influenza (HPAI) Antibodies and H5 virus in Small-scale Commercial and Backyard Free-Ranging Duck Enterprises in South East Asia.*

An animated map showing the evolution of outbreaks over the last six months including July 2009 is available at: [www.fao.org/ag/againfo/programmes/en/empres/maps.html](http://www.fao.org/ag/againfo/programmes/en/empres/maps.html).

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This overview is produced by the GLEWS team of FAO in EMPRES, 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 and Response System for Major Animal Diseases including Zoonoses.

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](mailto:glews@fao.org). Information will be treated confidentially if requested.