Flash news: H5N8 outbreaks in Europe (update: December 19, 2014)

What is the situation regarding H5N8 in Europe?

Highly pathogenic avian influenza (HPAI) of the subtype H5N8 was detected for the first time in Europe on November 5, 2014, in a commercial turkey flock in north-eastern Germany. Within two weeks, H5N8 was also found on four locations in The Netherlands and on one poultry farm in the United Kingdom (Yorkshire). Another outbreak, confirmed as H5N8, was detected in the Netherlands on November 30th on an egg production farm with no outdoor runs. H5N8 was detected in a fattening turkey holding facility in the Veneto region of Italy (December 15th) and on a turkey farm in Lower Saxony, Germany (December 16th).

The virus was also detected in a symptom-less wild common teal (*anas crecca*) shot by hunters in Germany, also in the north-eastern part of the country. H5N8 (along with H5N2) was also detected in wild and non-commercial captive birds in North America (Washington State, USA), but it is unclear at this time whether the strain is the same that is circulating in Europe.

Where did the virus come from?

Strictly speaking, this is unknown. The virus was initially reported as a low pathogenic strain in the State of Idaho in the United States in 2008 and again in 2014 in the State of California, according to the OIE. H5N8 as a highly pathogenic strain had been detected before in South Korea (>160 farms affected January - September 2014; 14 million poultry culled), Japan (April 2014) and China (September 2014) in commercial poultry and wild birds. Genetic analysis hints at a reassortment of three different AI viruses. There are no indications for components of human or swine influenza virus. The HA gene of the viruses isolated in Europe show a 99.5% identity to an isolate from Korea.

How did the virus get to Europe and into the poultry farms?

This is also unknown. What speaks for an involvement of migratory wild birds is that this virus was isolated several times in water fowl in East Asia as well as now in the wild teal in Germany. Migratory patterns seem to favour an indirect route and cross-infection between different birds (Figure 1), but there is little evidence in support of that hypothesis. It should be noted in any case that birds' migration behaviour is not very stable and likely to change, not least in the context of climate change.

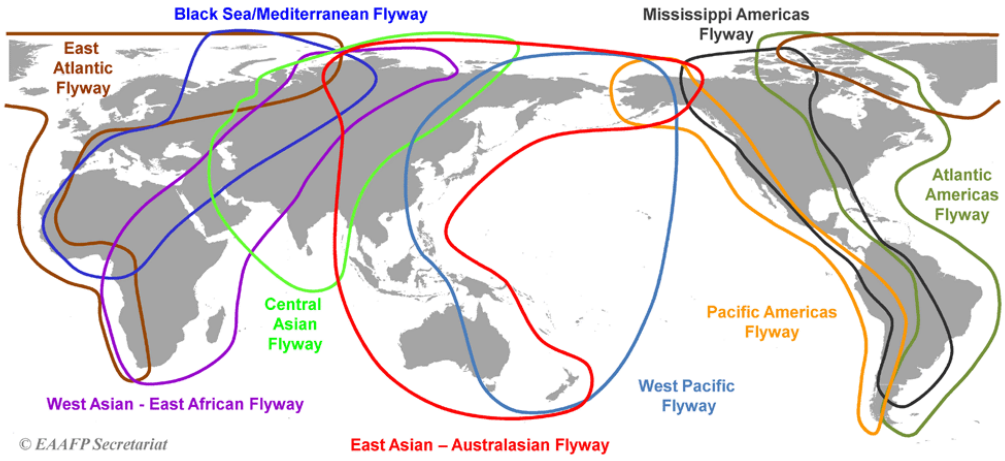

Figure 1: Flyways. Source: http://www.eaaflyway.net/the-flyway/

The German Friedrich-Loeffler-Institute considers wild birds and illegal trade the most likely entry routes of the virus both into the country and into the farms (Table 1).

Entry risk assessment of HPAIV	Risk category
I. Introduction into Germany by	
Illegal trade from Third countries	***high***
Legal trade from Third countries	***negligible***
Trade between EU member States	***negligible***
Wild birds	***high***
Introduction through passenger and vehicle traffic	***low***
II. Introduction into German poultry holdings of virus present in the country by	
Spread through passenger and vehicle traffic within Germany	***moderate***
Wild birds	***high***

Table 1: Entry risk assessment of HPAI into Germany. Source: http://www.fli.bund.de/no_cache/de/startseite/aktuelles/tierseuchengeschehen/klassische-gefluegelpest.html

The European Food Safety Agency reports: "*Direct contact between wild birds and farmed birds in the affected holdings was unlikely. It is more plausible that indirect introduction of HPAI H5N8 to poultry holdings via humans, vehicles, equipment, fomites, live animals and/or animal-derived products contaminated with virus (for instance in faeces) of infected birds took place. Investigations in the Netherlands suggested separate introductions into four holdings and one between-farm transmission.*"

What measures were taken to control the outbreaks?

Control and surveillance zones were established according to the relevant EU legislation. Affected farms were depopulated and the carcasses destroyed. Tracing and follow-up testing was performed, but no further cases were detected. A temporary movement ban was implemented in The Netherlands. Wild bird monitoring was intensified. Farm poultry in German regions with a high risk of con-

tact with migrating wild birds must be kept inside farm buildings. The effectiveness of that measure is controversial.

What is the impact for food safety and public health?

There are no known human cases of infection with H5N8. European, German and British authorities have declared that H5N8 does not pose a food safety risk and that the risk to public health would be 'extremely low'. Of course, a susceptibility of humans to H5N8 cannot be completely ruled out. Protective measures are therefore to be taken when handling potentially infected poultry or wild birds. There is no evidence that avian influenza of any kind can be transmitted to humans through the consumption of cooked food.

What to expect next?

Further outbreaks in Europe would not come as a surprise, but the series of outbreaks may as well come to an end as weather conditions, wild bird movement or other factors that determine exposure change. Should the virus enter poultry systems in countries with low veterinary preparedness, it "*could spread through farms with devastating effects, both on vulnerable livelihoods as well as on country economies and trade*", FAO and OIE warn in a joint press release. The document continues: "*avian influenza viruses continue to evolve and emerge with potential threats to public health, food security and nutrition, to the livelihoods of vulnerable poultry farmers, as well as to trade and national economies*".

What other aspects are to be considered?

Many different strains of avian influenza – some of which are quite dangerous indeed – are regularly detected in commercial poultry as well as wild birds globally. Our knowledge about their distribution is very sketchy and with every host movement or contact there is a new opportunity for the virus to change its characteristics. Experts have therefore little hope for dealing with AI in commercial poultry once and for all. What remains is surveillance – not difficult, mainly a question of money – and biosecurity. What professionals call biosecurity is often perceived by the general public as 'factory farming' and so it is all about communication once again.

References/web links/further reading

- http://www.fli.bund.de/no_cache/de/startseite/aktuelles/tierseuchengeschehen/klassische-gefluegelpest.html
- http://www.ecdc.europa.eu/en/publications/Publications/avian-influenza-AH5N8-Germany-risk-assessment.pdf
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- http://www.efsa.europa.eu/en/efsajournal/doc/3941.pdf
- Timeline of major H5N8 outbreaks in 2014: http://www.nwhc.usgs.gov/publications/wildlife_health_bulletins/WHB_2014-05_H5N8.pdf