



Scientific report on HPAI H5N8

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TERMS OF REFERENCE AND COLLABORATION

Terms of reference

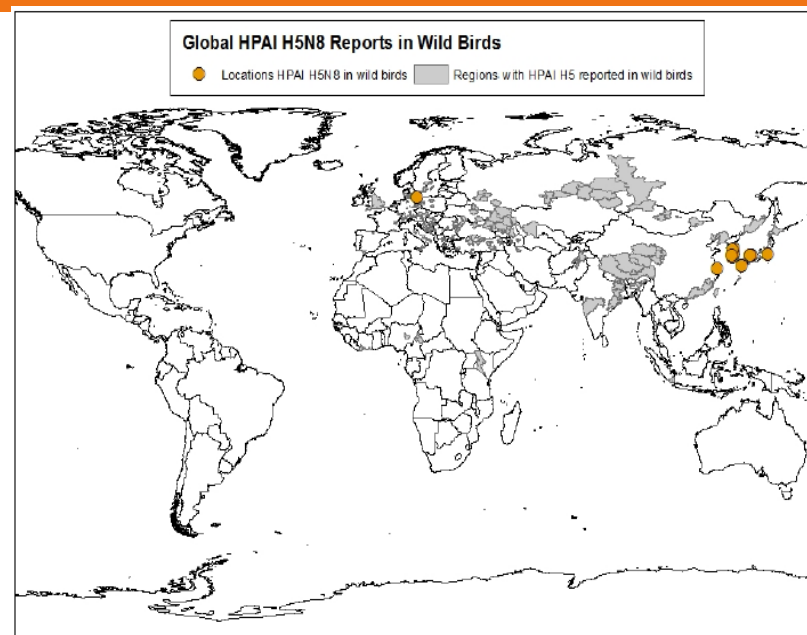
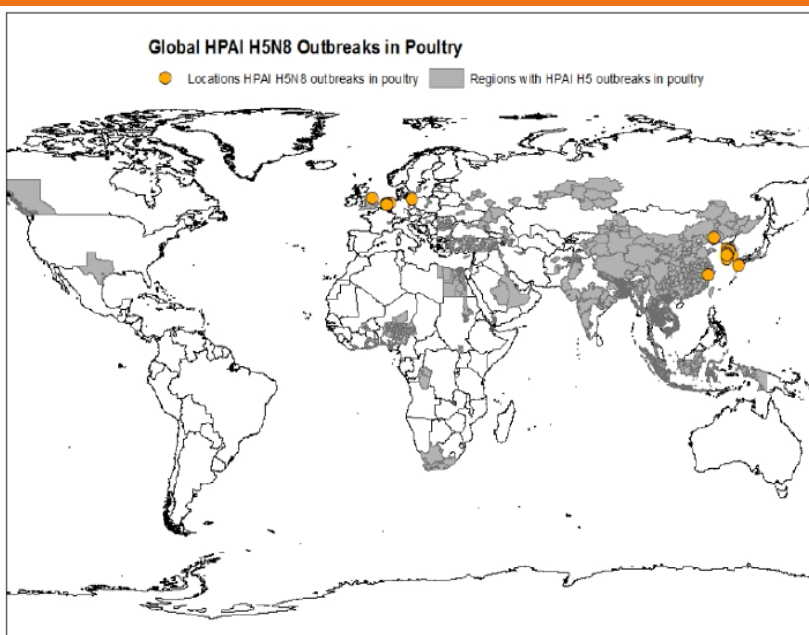
- Epidemiological analysis of the current situation regarding HPAI subtype H5N8 in Europe in order to assess possible entry routes and in particular the role played by wild birds.
- Review of the epidemiological situation of HPAI subtype H5N8 in the world

Arrival mandate: 24 Nov 2014

Delivery scientific report: 5 Dec 2014

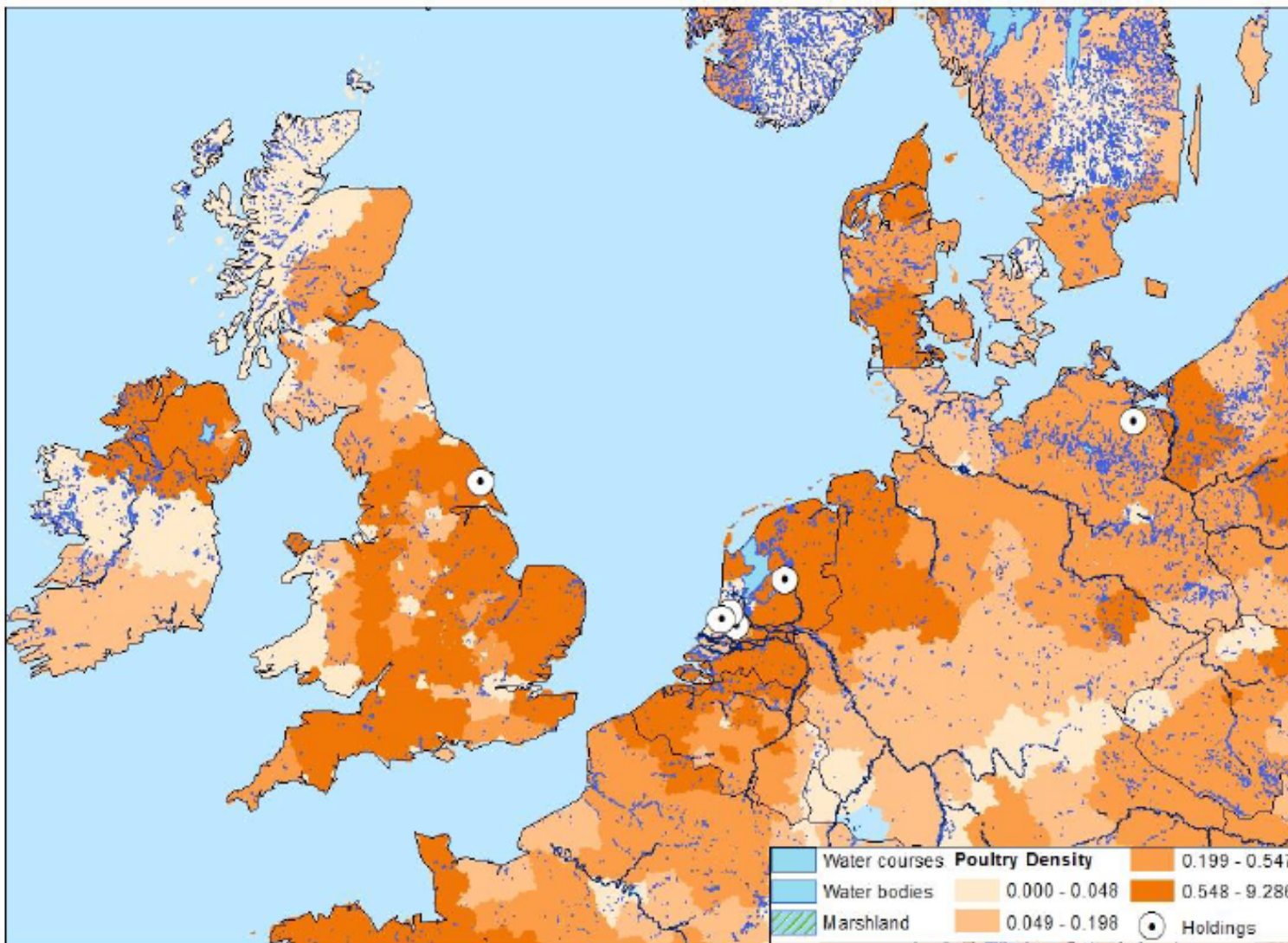
Collaboration with EURL and affected Member States (DE, NL and UK)

GLOBAL H5N8 OUTBREAKS



- On 5 Dec 2015, HPAI H5N8 outbreaks in poultry farms have been reported from
 - the **Republic of Korea** (from January 2014),
 - **Japan** (from March 2014),
 - **China** (from May 2014),
 - **Germany** (from November 2014),
 - **United Kingdom** (from November 2014) and
 - **The Netherlands** (from November 2014)

EUROPEAN HPAI H5N8 OUTBREAKS ON 5 DEC 2014



ENTRY OF H5N8 – WILD BIRDS

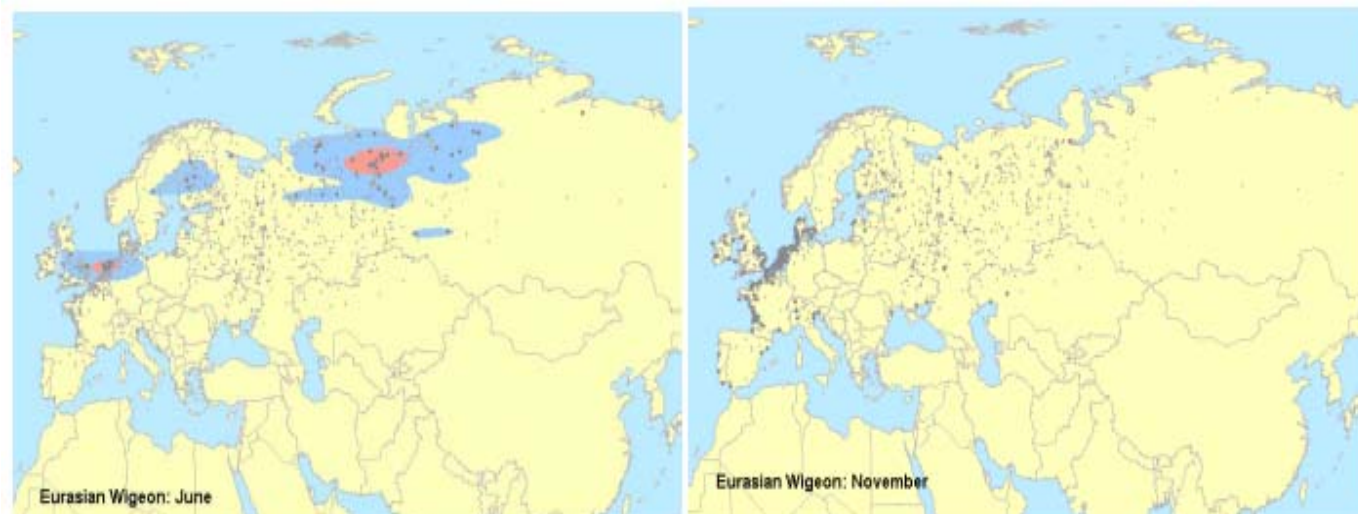
- The **entry** of HPAI H5N8 into Europe (single or multiple events) and its **subsequent further spread** within Europe are **two separate events which might involve different transmission routes**.
- There are **no known direct bird migration routes from east Asia to western Europe**. Although the movement of individual birds cannot be completely excluded, this is highly improbable.





ENTRY OF H5N8 – WILD BIRDS

- It has been hypothesised that long-distance transmission of HPAI viruses could occur as a result of **cross-infection between different birds in north Eurasian breeding areas**, where wild bird populations from different flyways possibly overlap, but this hypothesis needs further investigation.



Main migratory movement pathways for Eurasian wigeon based on ringing recoveries in June and November
(source: Migration Mapping Tool)



SPREAD OF H5N8 – WILD BIRDS

- HPAI H5N8 has been detected in one Common Teal (*Anas crecca*) in Germany and two faecal samples of Eurasian Wigeons (*Anas penelope*) in the Netherlands which confirms the **presence of the virus in wild bird populations in Europe. However, no signs of increased mortality or morbidity among wild birds have been reported.**
- **Knowledge of the occurrence of HPAI H5N8 infection in wild bird populations is required** in order to better understand the risk of transmission to poultry, which is important in the design of risk management strategies.

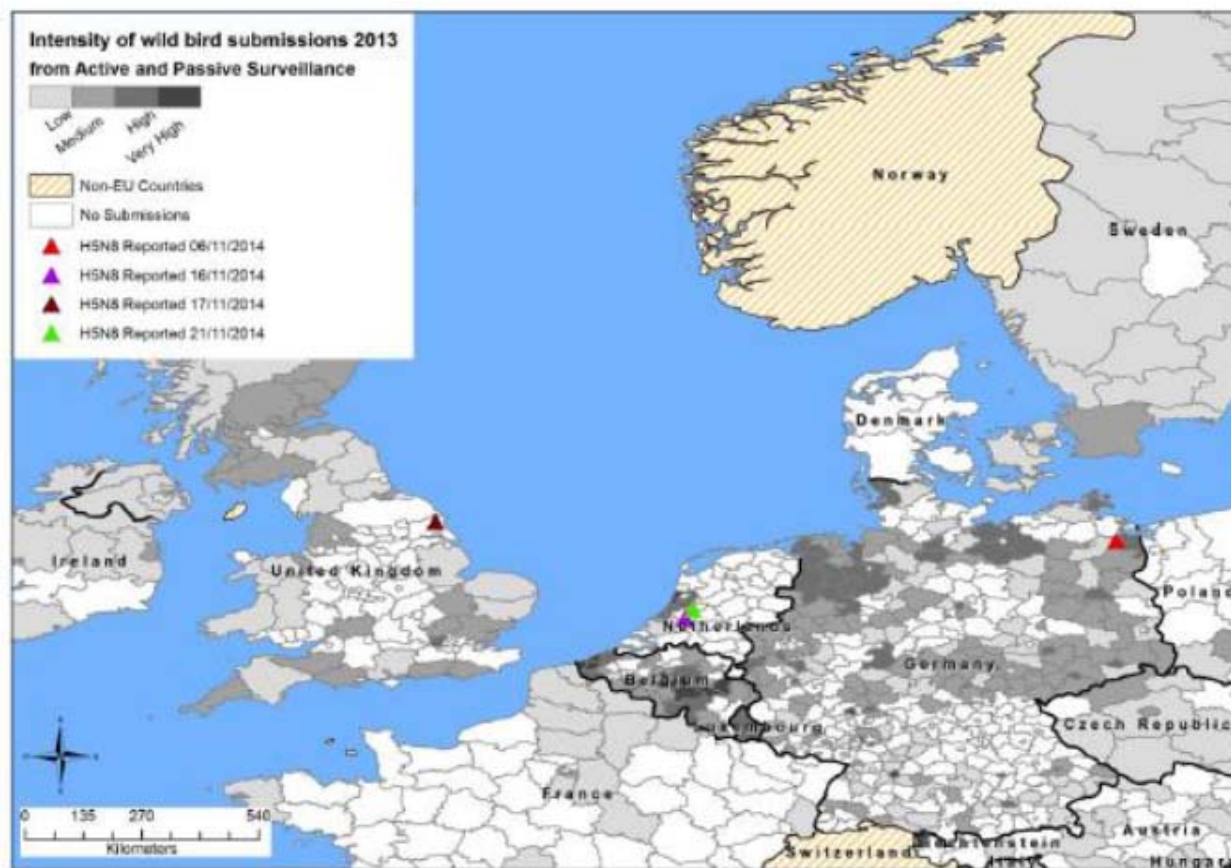
PATHOGENICITY HPAI H5N8

Field data and preliminary experimental infections indicate that **HPAI H5N8 is less pathogenic than HPAI H5N1 in domestic water fowl and aquatic wild birds but not in galliform poultry**

and that **several wild bird species** may be infected with HPAI H5N8 **without showing clinical signs.**



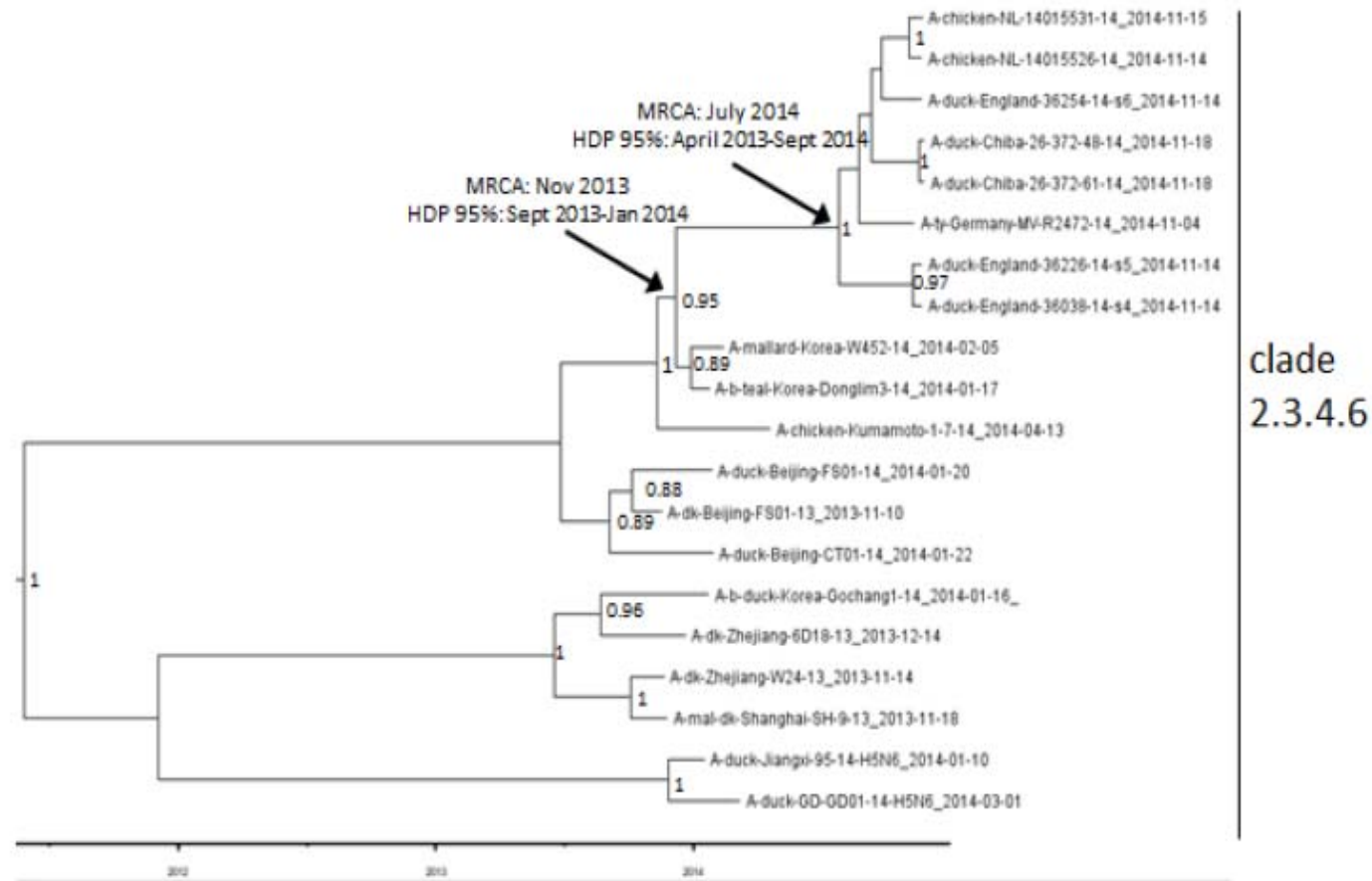
WILD BIRD SURVEILLANCE



Wild bird sampling density of 2013 based on the EU wild bird surveillance database and location of first four affected holdings in EU



SEQUENCE ANALYSIS HEMAGGLUTININ GENE



The European and Japanese cluster shares homology in the HA gene with viruses detected in Korea in early 2014



SPREAD OF H5N8 – WILD BIRDS

- Investigation in **the Netherlands** using next-generation full genome sequencing with phylogenetic tree analysis **suggests separate introductions into four holdings and one between-farm transmission.**
- The outbreaks in farms in Europe occurred in facilities which used indoor housing for the poultry; therefore **direct contact between wild birds and the 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.

RECOMMENDATIONS

- **Assessing biosecurity procedures at farm and area level** with a focus on segregation, cleaning and disinfection, and improving where necessary, is recommended in high risk areas.
- Given the apparent low pathogenicity of HPAI H5N8 for several wild bird species, **focussed strategic and proportionate enhancement of both active (targeted) and passive (scanning) surveillance of both living and dead wild birds in the high risk areas** would improve understanding the risk of virus transmission to poultry and might facilitate the design of targeted measures to reduce the risk of virus transmission between poultry and wild birds.



RECOMMENDATIONS

- The **close collaboration between the national and European laboratories and risk assessment institutions needs to be continued** to share data in real time and to ensure timely updated analyses on the evolving situation within the European Union.
- **Detailed epidemiological investigations** of the affected European farms and a **detailed assessment of all transmission routes** that might transport HPAI viruses from south-east Asia to the EU **should be continued** in order to identify the risk of HPAI introduction into Europe and into European poultry holdings.

