Scientific Task Force on Avian Influenza and Wild Birds statement on:

H5N8 Highly Pathogenic Avian Influenza (HPAI) in poultry and wild birds

20 December 2016

This statement, from the United Nations Environment Programme/Convention on Migratory Species (UNEP/CMS) and the Food and Agriculture Organization (FAO) Co-Convened Scientific Task Force on Avian Influenza and Wild Birds is released in response to the recent H5N8 highly pathogenic avian influenza (HPAI) developments (November 2016) to inform stakeholders in governments, the poultry sector, disease control, wildlife management, site management and conservation sectors about the potential interaction between wild birds and the H5N8 HPAI virus and appropriate ways of taking action.

KEY MESSAGES

1. *Typically, highly pathogenic avian influenza (HPAI) outbreaks are associated with intensive domestic poultry production and associated trade and marketing systems with spread of HPAI virus via contaminated poultry, poultry products and inanimate objects.*
2. *Spread of HPAI viruses to wild birds has resulted in mortality and conservation issues for wild birds. The specific role of wild birds particularly in the long-distance transmission of the virus, if existent, remains unclear.*
3. *Phylogenetic analyses indicate that wild birds acquired H5N8 HPAI from the pool of HPAI H5 viruses circulating in domestic Anseriformes (ducks and geese) in eastern Asia[1].*
4. *In 2014, H5N8 HPAI caused outbreaks in poultry in Asia, Europe and North America. Most detections were at relatively bio-secure production facilities but with some detections in wild bird species – with wild birds possibly being infected by poultry and vice versa.*
5. *In 2016, outbreaks of H5N8 HPAI were first reported from wild birds in the Republic of Korea, followed by detections in late spring in the Tyva Republic of the Russian Federation and subsequently from October in India, to date two countries in the Middle East, two in North Africa and 13 countries in Europe - with outbreaks in wild birds, poultry, hunting bird decoys and a small number of zoological collections.*
6. *Based on the existing, contradictory evidence, the origin of the current H5N8 HPAI virus strains remains as yet unresolved. It cannot be concluded that sustained transmission and independent maintenance of the virus from 2014 to 2016 took place in wild bird populations.*
7. *Although the reported numbers of infected dead wild birds in Europe are higher in 2016 than in 2014, there is – in the absence of systematic mortality assessments – no evidence of a change in the mortality of wild birds possibly caused by changes in the virus since 2014. To date, there is no evidence of any particular species being capable of long distance asymptomatic carriage of the virus.*
8. *Although H5N1 HPAI has involved human infections, H5N8 HPAI remains a bird-specific virus.*

[1] *The Global Consortium for H5N8 and Related Influenza Viruses (2016). Science 354, 213 -216*

9. *The Scientific Task Force on Avian Influenza and Wild Birds, urges countries, agencies and organizations to:*
    a. *further extend surveillance and collaboration across sectors, and epidemiological evaluation, to determine the true long-distance, regional and local transmission routes of the virus, including possible transmission through national and international poultry trade and its by-products, and mechanisms of transmission among domestic, captive and wild birds;*
    b. *focus disease prevention on biosecurity at poultry holdings and in marketing systems, and focus disease control actions on affected farms and zoos, with the aim of minimizing the risk of disease spread to other poultry farms, zoos and/or wildlife by preventing poultry/captive-bird-wildlife contact;*
    c. *recognize their international obligations and ensure that there is no consideration of killing of wild birds, spraying toxic products or negatively affecting wetland habitats as disease control measures, appreciating that focussing attention on wild birds, to the exclusion of other potential routes of transmission, can misdirect critical resources away from effective disease control and result in continued spread among poultry populations and economic losses to farmers and national income, as well as negative conservation and health outcomes and loss of biodiversity.*

Current situation

H5N8 HPAI virus was first detected in domestic poultry in China in 2010[2]. In 2014, multiple outbreaks of H5N8 HPAI occurred in domestic ducks, chickens and geese and in wild birds in the Republic of Korea with subsequent outbreaks in Japan, China, Germany, the Netherlands, the United Kingdom and the USA[3,4,5]. Only domestic but no wild birds were found positive for H5N8 HPAI in the United Kingdom, Italy and Hungary during those outbreaks[1].

In 2016, H5N8 HPAI outbreaks were reported from wild birds in the Republic of Korea (in March), and subsequently detected in five wild bird species in Tyva Republic, Russian Federation (dead birds found on 25 May 2016, and hunter-harvested birds in June)[6,7]. There were subsequent outbreaks in India (October), and from 26 October in 13 countries of Europe (in order of detection: Hungary, Croatia, Poland, Switzerland, Germany, Austria, Denmark, Netherlands, Sweden, Finland, Romania, Ukraine and Serbia), two countries in the Middle East (Israel and Iran) and two countries in North Africa (Egypt and Tunisia). More than 30 species of wild birds have been affected, usually waterfowl and fish or carrion feeding species, including mostly Tufted Duck (*Aythya fuligula*), and lower numbers of Common Pochard (*Aythya ferina*), Swans (*Cygnus* sp.), gulls (Laridae) including Black-headed Gull (*Chroicocephalus ridibundus*), other wild duck species (Anatidae), Common Coot (*Fulica atra*), storks (Ciconiidae), Grey

[2] *Zhao* et al*. (2013). Veterinary Microbiology 163, 351-357*
[3] *Y.-J. Lee* et al. *(2014). Emerging Infectious Diseases 20, 1087–1089*
[4] *D.-H. Lee* et al*. (2015). Journal of Virology 89, 6521–6524*
[5] *J. H. Verhagen, S. Herfst, R. A. M. Fouchier (2015). Science 347, 616–617*
[6] *D.-H. Lee et al. (in press). Emerg Infect Dis. 2017 Feb.*
[7] *OFFLU Situation Report and Guidance for H5N8 and other Eurasian H5 clade 2.3.4.4 Avian Influenza Viruses 29 November 2016*

Heron (*Ardea cinerea*), Great crested Grebe (*Podiceps cristatus*), Common Tern (*Sterna hirundo*), Great Cormorant (*Phalacrocorax carbo*), Painted Stork (*Mycteria leucocephala*), Pelican (*Pelecanus* sp.), Crow (*Corvus* sp.), Munia Bird (*Lonchura* sp.)[7], and recently some birds of prey (Common Buzzard *Buteo buteo* and White-tailed Eagle *Haliaeetus albicilla*). Outbreaks in poultry (chickens, ducks, turkeys) and captive bird collections have been reported in India and in seven European countries (Hungary, Austria, Germany, Denmark, Sweden, the Netherlands and France), and in hunting decoy ducks in France. All outbreaks were associated with mortality events/die-offs.

What is the role of wild birds in H5N8 HPAI?

In general, avian influenza viruses in wild birds can be transmitted to and from poultry, and potentially to and from some other domestic animals and people. Wild birds have been shown to be a reservoir for low pathogenic virus strains, with low prevalence though. Phylogenetic investigations of the current highly pathogenic H5N8 AI virus strains (within clade 2.3.4.4) and those strains circulating from 2014 to 2015 indicate that the virus evolved and returned[1]. However, virological and serological evidence, as well as results of field surveys in Central Eurasia between 2014 and 2016, indicate that sustained transmission and independent maintenance of the virus in wild bird populations during this period is unlikely[8].

There is no convincing evidence of any mechanism or wild bird species that is able to carry the H5N8 HPAI virus strains without causing the death of the carriers themselves during long distance migration.

The scientific community has not yet reached final conclusions regarding the relative likelihood of a significant role of wild birds in long distance spread, compared to that of origin and transmission of the current H5N8 HPAI virus strains by mechanisms involved in poultry production and trade. Considering the extensive poultry trade flows, including those between H5N8-affected regions (cf. UN Comtrade statistics), the risk of HPAI virus circulation by poultry production and trade remains significantly high.

H5N8 and human health

The EU/OIE/FAO Reference Laboratory for avian influenza has concluded that the virus is still predominantly a bird virus without any specific increased affinity for humans[9]. However, as in previous outbreaks, appropriate personal hygiene measures should be taken.

[8] *Poen et al. (2016). Euro Surveill. 21:pii30349*

[9] *European Commission (2016). http://ec.europa.eu/food/animals/animal-diseases/control-measures/avian-influenza_en, accessed 19 December 2016*

What actions should be taken?

Poultry farms and markets

Detections in indoor poultry farms where direct or indirect contact with wild birds has been considered negligible indicate transmission of H5N8 virus to these production sectors either from within the poultry industry or other fomites. In accordance with FAO and OIE guidance, most H5N8 HPAI disease control measures should focus on poultry farms and their by-products, and bird markets, including quarantine, stamping out, strict biosecurity, cleaning and disinfection, and trade and movement restrictions. Proper implementation of these steps will help control outbreaks and prevent the spread of the virus. Outreach and communication to allied industries of the poultry sector would be indispensable for compliance and preventing economic losses.

Zoos and other captive collections

Biosecurity measures, with cleansing and disinfection should be applied similarly to zoos and other captive collections. In the case of outbreaks, exceptions from complete culling should be considered if a risk assessment is performed and/or birds are of conservation importance, daily clinical surveillance of all birds is guaranteed, a surveillance plan is established, appropriate housing minimizes contact with the possible source of infection, and further spread is properly contained[7].

Wild birds

Complete investigations must be carried out before attributing the source of avian influenza virus infection in poultry to any other sources, including wild birds. Al experts (FAO, OIE, *Global Consortium for H5N8 and Related Influenza Viruses*) agree that culling of wild birds and draining or disinfecting wetlands should not be undertaken since these measures are counterproductive to H5N8 HPAI control. Disturbance of waterbirds and habitat destruction would lead to unforeseen movements of birds into other areas, with potential spread of the virus. Furthermore, such actions would contravene commitments made by signatory countries amongst others to the Convention on the Conservation of Migratory Species of Wild Animals (CMS), the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), the Ramsar Convention on Wetlands and the Convention on Biological Diversity (CBD).

The diagnostic protocols for the detection of the virus by Eurasian H5 real time RT-PCR remain fit for purpose. FAO and OIE recommend continuing and strengthening targeted wild bird surveillance activities in areas where Eurasian-origin-H5 clade 2.3.4.4 viruses have been detected and wherever increased mortality of wild birds is detected. Infected wild birds can be considered as an indicator for triggering deeper investigations into the sources of infection, including human infrastructure.

Research activities are needed in order to disentangle the true transmission routes and mechanisms for HPAI viruses within and among regions, including routes of poultry trade and its by-products and release of captive-reared birds[7]. Joint investigations across sectors (including ornithological expertise) are important to gain improved knowledge of risk pathways, modes of spread and host range of influenza viruses. To inform this, official government reports should include as much specific information as possible, including scientific species names and numbers of individuals involved. Additionally, research on migratory movements of wild birds is recommended.

The Scientific Task Force on Avian Influenza and Wild Birds

The United Nations Environment Programme/Convention on Migratory Species (UNEP/CMS) and the Food and Agriculture Organization (FAO) co-convened the Scientific Task Force on Avian Influenza and Wild Birds in 2005. It works as a communication and coordination network and continues to review the role of wild birds in the epidemiology of AI and the impact of the disease on wild birds, promoting a balanced opinion based on currently available evidence. Task Force observers include the United Nations Environment Programme, World Health Organisation and World Organisation for Animal Health (OIE). Task Force members include FAO, CMS, and the African Eurasian Waterbird Agreement (AEWA), BirdLife International, Ecohealth Alliance, International Council for Game and Wildlife Conservation (CIC), Ramsar Convention, Royal Veterinary College, Wetlands International, and Wildfowl & Wetlands Trust (WWT).

FURTHER INFORMATION

ECDC
http://ecdc.europa.eu/en/publications/Publications/risk-assessment-avian-influenza-H5N8-europe.pdf

FAO: This FAO Manual provides practical guidance for wild bird surveillance techniques:
http://www.fao.org/docrep/010/a0960e/a0960e00.htm
http://www.fao.org/AG/AGAINFO/PROGRAMMES/EN/empres/H5N8/situation_update.html
http://www.fao.org/3/a-i6113e.pdf

OFFLU:
http://www.offlu.net

Best practice guidance:
http://www.offlu.net/fileadmin/home/en/publications/pdf/OFFLUsurveillance.pdf

OIE: H5N8 updates
http://www.oie.int/animal-health-in-the-world/update-on-avian-influenza/2016/

WHO: The World Health Organization provides guidance and updates information regarding genetic alterations in animal influenza viruses that relate to increased virulence for humans to help inform public health risk assessment.
http://www.who.int/influenza/human_animal_interface/Influenza_Summary_IRA_HA_interface_10_03_2016.pdf?ua=1
http://www.who.int/influenza/human_animal_interface/avian_influenza/riskassessment_AH5N8_201611/en/

Ramsar Convention: The Ramsar Wetland Disease Manual provides specific practical guidance on preventing and controlling avian influenza and a range of other wetland-related disease issues:
http://www.wwt.org.uk/rwdm
http://strp.ramsar.org/strp-publications/ramsar-technical-reports/rtr-no.7-ramsar-wetland-disease-manual-guidelines-for-assessment-monitoring-and-management-of-animal-disease-in-wetlands-2012

Ramsar's Handbook on avian influenza and wetlands provides a major source of information, including a risk assessment for wetland managers and dealing with the media: http://ramsar.rgis.ch/pdf/lib/hbk4-04.pdf

Multilateral Environmental Agreements on HPAI from Ramsar Convention, Convention on Migratory Species and the African Eurasian Waterbird Agreement:
http://ramsar.rgis.ch/pdf/res/key_res_x_21_e.pdf
http://ramsar.rgis.ch/pdf/res/key_res_ix_23_e.pdf
http://www.cms.int/sites/default/files/document/Res_9_08_Wildlife_Disease_En.pdf
http://www.cms.int/sites/default/files/document/CP8Res_8_27_Avian_Influenza_eng_0.pdf
http://www.unep-aewa.org/sites/default/files/document/res4_15_responding_threat_ai_final_0.doc

Others
Comtrade - on poultry trade worldwide: https://comtrade.un.org
Gisaid - gene sequences of virus: http://platform.gisaid.org/epi3/frontend#1cba54
Krauss et al. (2016). Proc. Nat. Acad. Sci. USA 113(32): 9033–9038