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

H5N1 Highly Pathogenic Avian Influenza in poultry and wild birds: Winter of 2021/2022 with focus on mass mortality of wild birds in UK and Israel

21st January 2022

This statement, from the Convention on Migratory Species (CMS) and the United Nations Food and Agriculture Organization (FAO) Co-Convened Scientific Task Force on Avian Influenza and Wild Birds, is released in response to the extensive and large-scale outbreaks of highly pathogenic avian influenza (HPAI) in wild birds in the northern winter of 2021/22. The purpose is to inform stakeholders in governments, the poultry sector, disease control, wildlife management, site management and conservation sectors about HPAI viruses in wild birds and appropriate responses. Specific notes with recommendations and a guide to existing guidance for those managing regionally and globally important sites for waterbirds and other wildlife are included.

Contents

Key Messages

1. Highly pathogenic avian influenza (HPAI) outbreaks are typically associated with domestic poultry production and associated trade and marketing systems, with spread of HPAI virus via contaminated poultry, their excretions or secretions and contaminated objects. Such outbreaks follow on from initial introduction of a low pathogenicity H5 or H7 subtype virus from wild birds. Since the mid-2000s, spillover of highly pathogenic H5Nx viruses has occurred on multiple occasions from poultry to wild birds and has resulted in subsequent inter and trans-continental spread of H5Nx viruses via wild bird movements across Eurasia, Africa and, on two occasions, North America[1].

2. Throughout the northern autumn and winter of 2021/22, multiple HPAI outbreaks at various scales, caused predominantly by H5N1 HPAI virus, plus other subtypes including H5N8, have occurred in poultry, zoological collections and wild birds.

3. Wild birds are victims of HPAI viruses: during this period, the wild bird cases have included multiple reports of mass mortality notably in the UK, The Netherlands, Israel and India. Affected sites include areas of international conservation importance for waterbirds, and the scale of mortality poses a potential risk to populations. Notably, globally threatened species have been killed by the virus.

4. Those authorities with responsibility for animal health are reminded of: the importance of cross-sectoral One Health[2] approaches for communication and coordination for preparedness and responses; maintaining intensified surveillance and biosecurity measures to reduce spillover and spillback risks between poultry and wild birds; and of their international obligations to ensure responses do not include lethal responses to wild birds, nor actions that would cause detriment to natural settings including by the use of disinfectants in wetlands.

5. Those with responsibilities for managing wetlands and other natural settings are reminded of the importance of minimising risks to sites from poultry and people, plus management options available to them to reduce risk to wild birds, including the importance of good surveillance and data collection to enhance our understanding of the epidemiology of HPAI in wild birds.

6. This statement provides pointers to a range of guidance from intergovernmental bodies.

[1] Ramey *et al.* (2022)

[2] One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognises the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent. See https://www.who.int/groups/one-health-high-level-expert-panel

Current situation

HPAI viruses of the original goose/Guangdong/96 (Gs/Gd) lineage, predominantly H5N1 and H5N8, have continued to circulate in Asia, Africa and Europe following the resurgence of extensive outbreaks since October 2021[3,4,5,6]. The epizootic at that time in Europe, caused by viruses of the 2.3.4.4b clade, was considered unprecedented. This lineage can be considered particularly 'fit', and indeed unusually there were detections of these viruses in the summer months in wild birds (as well as poultry) in Europe, indicating continued circulation of virus in wild birds during this time[7]. Although H5N8 HPAI is still responsible for poultry and wild bird cases mainly in Asia, H5N1 has now in effect replaced this subtype in Africa and Eurasia in both poultry and wild birds. The wide range of wild birds affected including wildfowl, waders, gulls, cranes, grebes, herons, pelicans, gamebirds, corvids and raptors (diurnal and nocturnal), in addition to sporadic cases in mammals such as red fox *Vulpes vulpes*, Eurasian otter *Lutra lutra* and harbour *Phoca vitulina* and grey seal *Halichoerus grypus*[3], indicates the potential for multiple and complex negative ecological impacts.

As an example of unusual timing, location and host species, during the summer of 2021, beginning in July, a number of great skuas *Catharacta skua* were reported with H5N1 HPAI in the far northern Scottish Islands[7].

In a more typical pattern, the number of wild bird and poultry reports of infection increased during the autumn/winter months of 2021. Notable wild bird outbreaks involving H5N1 HPAI include deaths in November of approximately 300 demoiselle cranes *Anthropoides virgo* in Rajastan, India[8],[9]. *[At time of writing some of the recent wild bird mortality events are not yet reported in the scientific literature.]*

In the UK, mass mortality has been described on the Solway Firth in South West Scotland[10]. Beginning in early November 2021, barnacle geese *Branta leucopsis* were seen to be dying. Although other species such as waders and other wildfowl have been affected[11], the large population of Svalbard-breeding barnacle geese has been the focus of the epizootic, with some 8,000-10,000 estimated dead to date. At time of writing, over 20% of the total flyway population is estimated to have died. The same species, but of other populations, was particularly affected during the previous winter in continental Europe[3].

In The Netherlands, H5N1 HPAI has been associated with the death of hundreds of red knot C*alidris canutus* and other waders near Schiermonnikoog (Waddensea) in December 2021[12]. Notably red knot were severely affected by H5N8 HPAI last winter in The Netherlands.

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[3] EFSA (2021)
[4] FAO website - avian influenza situation updates
[5] OIE website - avian influenza
[6] Scientific Task Force on Avian Influenza and Wild Birds statement, February 2021
[7] Caliendo *et al*. (2022)
[8] https://timesofindia.indiatimes.com/city/jaipur/300-demoiselle-cranes-died-of-bird-flu-in-2-rajasthan-districts-report/articleshow/87809926.cms
[9] https://promedmail.org/promed-post/?place=8700509,317#promedmailmap
[10] https://www.bbc.co.uk/news/uk-scotland-south-scotland-59669263
[11] https://www.gov.uk/government/publications/avian-influenza-bird-flu-in-europe
[12] https://www.wur.nl/nl/Onderzoek-Resultaten/Onderzoeksinstituten/Bioveterinary-Research/show-bvr/Vogelgriep-bij-wilde-vogels.htm

The Hula Valley region of Israel has witnessed mass mortality beginning in December 2021 involving deaths of some 8,000 common cranes *Grus grus*[13]. Globally threatened species such as marbled teal *Marmaronetta angustirostris* have died, as have hundreds of great white pelicans *Pelecanus onocrotalus* (the victims of large-scale die-offs in West Africa in December-January 2020-21 and at other sites in Europe[6]). Despite significant operations to remove carcasses and hence reduce infection pressure, concerns remain for those cranes wintering further south in north east Africa that will use the Hula Valley as a staging site during spring migration.

Of additional concern, in terms of potential for wider geographical spread in the Americas, is the first detection of the same lineage of virus in Newfoundland, Canada, in December 2021, and in hunted wildfowl in the eastern USA reported in January 2022. The aforementioned cases in skuas (which in effect act like raptors and likely represent sentinels of infection in other birds), and the detection of the same virus in the gulls in Newfoundland, suggest wild bird movements being involved in the introduction to the Americas[7].

In terms of human health, the currently circulating H5N1 HPAI viruses do not apparently pose the same zoonotic risk as the 'original' Asian lineage H5N1 (clade 2.2 and their derivatives plus clade 2.3.4.4b H5N6 viruses currently in China). In general, the risk can be considered low, recognising that some agencies now consider occupational exposure, *e.g.* those working on poultry culling operations, as low/moderate[3].

The scale of mortality across Europe and parts of Asia, plus the findings of asymptomatic carriage of infection in some duck and goose species[1] has again indicated that wild birds can be both victims and vectors of infection. Lack of robust surveillance and contextual information surrounding many of the wild bird deaths continues to prevent good epidemiological understanding. Studies such as that of Kleyheeg *et al.* (2017), which at least attempt to quantify mortality and its potential impacts, by working across both wild bird and virology monitoring sectors, are to be encouraged.

Continued evolution of the Gs/Gd lineage viruses in the last several years has occurred in both poultry and wild bird populations. Whilst there is continued maintenance in both 'populations' this process will still remain dynamic and is likely to involve further changes in the virus. Spread of HPAI viruses from poultry or between wild birds, with consequent co-circulation of low pathogenic AI viruses naturally maintained in wild birds, can give rise to new virus variants through genetic recombination[1]. The emergence and spread of such variants is a dynamic on-going process that is likely influenced by species susceptibility, population structure and immunity, behaviour, virus fitness and environmental conditions.

In summary, a disease once essentially confined to the poultry sector which spread most significantly to wildlife in 2005, is now again, responsible for regular large-scale losses of wildlife and repeated spillback to poultry with consequent significant impacts and threats. As pressures on biodiversity continue, and noting calls for reassessment of the poultry sector, this One Health issue requires cross-sectoral working and responses to ensure conservation obligations are met and health of people, livestock and wildlife is protected.

[13] https://www.birdlife.org/news/2022/01/10/israel-and-uk-facing-record-breaking-bird-flu-outbreaks/

Guidance on responses and further information

General recommendations for countries affected and/or at risk

Effective prevention and management of HPAI outbreaks requires a One Health approach to ensure appropriate cross-sectoral attention to human, animal and environmental health and coordination among agencies. Maintaining intensified surveillance and biosecurity measures, along with awareness raising by local authorities, is of utmost importance in high-risk areas and at times of high risk.

Poultry: Responses to HPAI in poultry must follow OIE international standards, guidelines and recommendations on notifications, surveillance, diagnosis, trade and control measures[14] and official national regulations. Biosecurity should include efforts to prevent spread of infection from infected poultry holdings to wild birds. Improved standards of hygiene and a reduction of the density of commercial poultry farms is recommended. This is primarily important in densely populated poultry areas and areas close to wetlands. Long term, a reorganization of poultry production systems highly susceptible to avian influenza exposure will minimise the risk of virus introduction and further spread. Further recommendations are provided by EFSA (2021)[3].

Wild birds and wetlands: There is no benefit to be gained in attempting to control the virus in wild birds through culling or habitat destruction. All those with responsibilities for animal health are reminded of advice of FAO and OIE, and international obligations under CMS, the Ramsar Convention and the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), to ensure that there is no consideration of killing of wild birds, spraying toxic products or negatively affecting wetland and other habitats as disease control measures. For poultry disease control, 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. Importantly it can also result in negative conservation outcomes and loss of biodiversity with resultant negative impacts on human and domestic animal health.

High levels of protection of wetland habitats has been found to provide lower HPAI risk which is most likely related to separation of poultry operations from within wild areas and 'attracting' wild birds from human-dominated landscapes to more natural habitats[15].

Captive birds: There is no justification for any pre-emptive culling of zoological collections. Control measures for captive wild birds in places where virus is detected should be based on strict movement control, isolation and, only when necessary, limited culling of affected birds.

[14] https://www.oie.int/en/what-we-do/standards/codes-and-manuals/terrestrial-code-online-access/?id=169&L=1&htmfile=chapitre_avian_influenza_viruses.htm
[15] Wu *et al.* (2020).

Guidance in relation to minimising risks to wild birds

Substantial guidance already exists (see Key Guidance Documents) and this statement synthesises advice from the main intergovernmental health and conservation bodies to specifically help those involved in conservation and management of wetlands, waterbirds and other natural and agricultural settings used by birds.

Contingency planning, undertaken in 'peacetime', (see Ramsar Wetland Disease Manual Section 3.1.4 p67-71) should involve planning for implementation of potential restrictions at a natural site in the event of a significant wild bird die-off. Such 'emergency response plan' restrictions would aim to protect wild bird health, and reduce risks to poultry and people. Measures, which could be flexible and implemented according to risk level, would include *e.g.* changes in management[16], and suspension of sources of potential disturbance such as human recreational activities (*e.g.* access to footpaths, sailing and hunting). For effective and timely responses, the plans require pre-determined processes and structures to allow efficient cross-sectoral working and communication with relevant stakeholders.

As mentioned above, those managing important natural areas are in key positions to both help reduce impacts of HPAI and improve our collective understanding of the epidemiology of the disease in wild birds, and are encouraged to gather good data to help support that goal – as described later in this guidance.

Biosecurity in natural settings

HPAI viruses can reach new wetland and other natural settings by three main routes:

1. Movements of wild birds – either local movements (such as from poultry holdings/domestic settings including from 'bridge species' which may use domestic, agricultural and wetland habitats) or longer distance movements including seasonal migration.
2. Poultry and their carcasses, excretions or secretions being introduced to natural sites *e.g*. by siting poultry holdings in natural areas, run-off from poultry holdings, use of poultry manure as fertiliser or fish food, or grazing of domestic ducks in wetlands.
3. People and their vehicles accidentally bringing infection into a site from either infected poultry sites/domestic settings or from other infected wild areas.

At times of high risk, *i.e.* prior to, or following, an outbreak of HPAI at a site, biosecurity should be increased to reduce risk of spread into, or out of, a natural site. This can involve:

1. Deployment of an emergency response plan (see above)
2. Increased biosecurity at local poultry holdings – importantly excluding/minimising contact with wild birds including 'bridge species' which risk spread to and from the poultry, and ensuring

[16] This may include changes where species, such as geese, are under active management.

appropriate poultry carcasse management to prevent scavengers and carnivores carrying infection to wild areas

3. Reducing human activity in, into and out of a wetland or other natural site
4. Disinfection of footwear or tyres *etc*. of those entering and exiting wetland or other natural areas (as appropriate)
5. Reducing other forms of disturbance that may encourage wild birds to fly to other areas (see 'emergency response plan' above)
6. Considering suspension of hunting in sensitive areas to reduce disturbance and reduce possibilities of spreading infection from the natural areas into the domestic setting by moving infected hunted birds, additionally reducing risks to health of both humans and hunting dogs.
7. Preventing the use of poultry feaces as fish feed in open aquaculture settings, and poultry viscera being used in fishing (to be limited year round)
8. Preventing domestic duck grazing in natural wetlands (to be limited year round).

See FAO Manual No. 165 (Section 1 in English and French) for the principles of biosecurity in the poultry context and the Ramsar Wetland Disease Manual for this in the context of wetlands (Section 3.2.4 p83-86).

Monitoring and surveillance of natural sites

Monitoring of natural sites is essential to determine if infection is present. Both targeted (active) and scanning (passive) surveillance is encouraged. Sick or dead birds should be reported to local authorities (veterinary services, public health officials, community leaders, *etc*.). These should be tested for avian influenza viruses and information, including on viral genomics, should be shared in a timely manner.

Provision of a means of reporting of sick or dead birds should be introduced, *e.g.* telephone hotlines or means by which to share photographs such as citizen science platforms. Quantifying mortality is to be encouraged[17].

Action should be taken to raise awareness of site users and local inhabitants of importance of vigilance, biosecurity and the reporting mechanisms for sick or dead birds (see Ramsar Wetland Disease Manual Communication and Public Awareness Section 3.5.1 p150-156 and FAO Manual No. 25 in English and Spanish).

If hunting is being undertaken at the site, collaboration with local hunters for testing of their birds can provide useful samples for surveillance.

In the face of an outbreak, as well as testing of sick or dead birds and recording any rings or other tags, additional data such as the checklist suggested by the Ramsar Wetland Disease Manual Section 3.3.5 p 106-110, or Annex 1 of FAO Manual No. 4 (English and French) should be gathered to assist local authorities and to improve understanding of the epidemiology of the disease in wild birds. Citizen

[17] Kleyheeg *et al*. (2017)

scientists and NGO networks can play a crucial role in data gathering and collation. Collaborative responses between land management, conservation and health bodies are to be encouraged.

For guidance see below and Article 10.4.29 of the OIE Terrestrial Code chapter on surveillance of wild bird populations; Ramsar Wetland Disease Manual Surveillance and Monitoring Section 3.3.1 p89-96 and FAO Manuals No. 4. (English and French) and No. 5. (English and French). See also the OIE Terrestrial Manual of diagnostic tests for avian influenza.

Disinfection and sanitation

Disinfectants should not be introduced to wetland sites or other sensitive sites. Disinfectants may be used at key localised access points for personnel and possible fomites, such as footwear and tyres, as long as chemicals do not enter the water courses.

Spraying of birds or the environment with disinfectant, such as sodium hypochlorite or bleach, is considered counter-productive, harmful to the environment and not effective from a disease control perspective.

See Ramsar Wetland Disease Manual Disinfection and Sanitation Section 3.4.1 p114-116.

Carcasses of wild birds: to remove or not?

In some natural settings, attempting to remove carcasses for disposal has the potential for creating problems caused by disturbance and displacement of birds, and potential for spread of infection by both the displaced birds and those personnel and vehicles involved in disease control measures. In settings where birds are more habituated to human presence and activities, removing carcasses may not cause too much additional disturbance.

If disposal of carcasses is deemed appropriate based on national legislation and a risk assessment which includes the following considerations, then carcasses can be collected for disposal:

1. Scale of mortality (in comparison with historical 'normal' for the site)(see Ramsar Wetland Disease Manual Section 3.3.2 Identifying a disease problem p97-99)
2. Likelihood of high exposure of carcasses to other wild birds *e.g.* areas where carcasses can be easily scavenged or carcasses are in key feeding and roosting areas
3. Easy access to carcasses with minimal disturbance
4. Possibility of successful disposal
5. Minimal risks to biosecurity during disposal operations.

How to collect and dispose of wild bird carcasses

If decisions have been made to collect carcasses this should be done with the minimum number of people required and in a manner least likely to cause disturbance *e.g.* by clearing high tide carcasses at

low water. Strict attention should be paid to personal protective equipment (PPE) with good subsequent cleansing and disinfection.

For disposal of carcasses, primary consideration should be given to official means of disposal by local animal health authorities. Options include:

1. Burying – recognising problems with suitable sites in wetland areas, and need for avoidance of affecting water courses
2. Incineration
3. Specialist composting.

See Ramsar Wetland Disease Manual Collection and Disposal of Carcasses Section 3.4.2 p117-120 or FAO guidance for poultry disposal (English and French).

Integrating disease planning into site management plans

Natural settings: See Ramsar Wetland Disease Manual Section 3.1.3 p63-66 plus Section 3.1.4 p67-71 on Contingency Planning which explain the value of integrating disease management into site management plans to reduce risks in the long term. Chapter 2 of the Ramsar Handbook No. 4 (English, French and Spanish) provides guidelines for reducing avian influenza risks at Ramsar sites and other wetlands of importance for waterbirds including zoning of activities.

FAO Manual No. 25 (English and Spanish) provides the principles for contingency plans which can be adapted to suit natural settings.

Poultry settings: Factoring disease risk into land planning for poultry rearing activities can help to anticipate and ideally minimise the conditions that allow for the mixing of wild and domestic species.

Human health considerations

Despite the relatively low zoonotic potential of the current circulating viruses discussed in this statement, strict health and safety measures should be employed for those handling infected birds and materials. This should include use of PPE, including face coverings, as well as regular and proper washing of hands and clothing and footwear. This should always be done after handling birds or other animals, when cooking or preparing animal products, and before eating. Where waterbird and terrestrial gamebird hunting is permitted, these measures are also relevant to hunters especially in or near regions of outbreaks. Medical attention should be sought immediately if any symptoms of fever are noted after contact with poultry, farmed birds, wild birds or other animals.

See Chapter 12 of FAO Manual No. 4 (English and French).

Resources

Key guidance documents

- Ramsar Wetland Disease Manual Ramsar Technical Report No. 7 (2012).
- Ramsar Handbook No. 4 (2010) on 'Avian Influenza and Wetlands' available in English, French and Spanish.
- FAO Animal Health Manual No. 5: Wild Birds and Avian Influenza (2007): available in English, French, and multiple other languages.
- FAO Animal Health Manual No. 4: Wild Bird Highly Pathogenic Avian Influenza Surveillance (2006): available in English, French, and multiple other languages.
- EFSA Avian influenza overview September –December 2021
- OIE Terrestrial Code chapter on High Pathogenicity Avian influenza
- OIE Terrestrial Manual chapter on Avian influenza
- OFFLU Influenza A cleavage site update 2022
- IUCN/OIE Guidelines for Wildlife Disease Risk Analysis
- IUCN/OIE Manual of Procedures for Wildlife Disease Risk Analysis

Other FAO Guidelines

- FAO Animal Health Manual No. 25: Good Emergency Management Practice: The Essentials – also available in Spanish
- FAO Manuel de Santé Animale No. 11: Méthode de Bonne Gestion des Urgences: Les Fondamentaux – French
- FAO Animal Health Manual No. 165: Biosecurity for Highly Pathogenic Avian Influenza – also available in French
- FAO Animal Health Manual No. 3: Preparing for Highly Pathogenic Avian Influenza – also available in French and Spanish
- Focus On: Carcass management for small- and medium-scale livestock farms Practical considerations – also available in French
- Focus On: Rational use of vaccination for prevention and control of H5 highly pathogenic avian influenza – also available in French
- Q&A on avian influenza with FAO's Global Surveillance Coordinator

Situation reports

Global situation updates are provided regularly by FAO EMPRES here.

The OIE WAHIS interactive database of outbreaks can be found here and the OIE Avian Influenza Portal is here.

- EFSA Avian influenza overview September –December 2021
- OFFLU avian influenza statement (November 2021)
- OFFLU statement on outbreak of H5N1 high pathogenicity avian influenza in Newfoundland, Canada
- Avian influenza report of the OIE/FAO Network of expertise on animal influenzas (OFFLU) covering the period March – September 2021
- Global Avian Influenza Surveillance in Wild Birds: A Strategy to Capture Viral Diversity

Multilateral Environmental Agreements on HPAI and wildlife health from the Ramsar Convention, Convention on Migratory Species (CMS) and the African Eurasian Agreement on Migratory Waterbirds (AEWA):

- Ramsar Resolution XI.12: Wetlands and health: taking an ecosystem approach
- Ramsar Resolution X.21: Guidance on responding to the continued spread of highly pathogenic avian influenza
- Ramsar Resolution IX.23: Highly pathogenic avian influenza and its consequences for wetland and waterbird conservation and wise use
- CMS Resolution 12.06 Wildlife disease and migratory species
- AEWA Resolution 4.15 Responding to the spread of highly pathogenic avian influenza H5N1

The Scientific Task Force on Avian Influenza and Wild Birds

The Convention on Migratory Species (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).

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