

# Rapid Risk Assessment for Highly Pathogenic Avian Influenza (HPAI) H5N1 from the shooting of wild waterfowl and wild game (including formerly captive) birds

23 August 2022

## Summary

This rapid risk assessment is looking at the 3 main shooting activities (wildfowling, driven game shooting and shooting woodpigeon under a general licence) which could lead to the immediate long-distance dispersal of wild birds, and how that could impact on the geographic spread of wild birds infected with highly pathogenic avian influenza virus (HPAIV).

The grouse and snipe shooting season started on 12 August and the UK is in the unprecedented situation that HPAI H5N1 is present in wild seabirds breeding at coastal sites around much of Great Britain (GB). Wader bird species of the family Scolopacidae (including Common snipe (*Gallinago gallinago*)) migrate at this time of year and may carry infection. Although they are more likely to frequent coastal sites, some will visit inland waters over the late summer and early autumn.

Expert opinion (Defra's Ornithologists Expert Panel, 2016)<sup>1</sup> during the HPAI H5N8 epizootic of 2016 to 2017 was that wildfowling, or more general shooting of ducks and geese, would not significantly increase the risk for immediate long distance spread of avian influenza infected wild birds, due to the low number of guns. Driven game shoots are considered a lower risk due to the limited dispersal of managed wild game. Shooting woodpigeon under a general licence is considered to be lower still, as the general licence only authorises shooting in England around crops, fruit and vegetables, and around livestock foodstuffs in order to prevent serious damage. Devolved administrations issue equivalent general licences. The unusual length of the 2021 to 2022 epizootic with H5N1 present in wild birds in the summer and 'order shift' of HPAI into wild bird species (gulls, gannets, auks and terns) means it is timely to reassess this risk.

At this unprecedented late stage in the avian influenza season (23 August), for poultry premises there is a LOW (with low uncertainty for stringent biosecurity and high

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<sup>1</sup> Ornithologists Expert Panel, comprising experts from BTO, RSPB, WWT, JNCC, SNH, BASC, SG, WG, APHA, DAERA, NRW, NE and others, met on 19 December 2016.

uncertainty for sub-optimal biosecurity) risk of exposure of poultry to HPAI H5 from the wild birds present. Although the wild migratory water birds (ducks, geese and swans) which overwinter in the GB left some three months ago, there is sustained circulation of virus in wild bird species including seabirds at coastal breeding sites in particular and also some sedentary species (gulls, moorhens, mute swans, raptors) at some inland sites. The risk of HPAI H5N1 in wild birds across GB is currently (23 August 2022) at MEDIUM although it is recognised that there may be geographic variation, based on proximity to aggregation/coastal breeding sites.

The release of game birds within an avian influenza restriction zone is not allowed. Captive pheasants and partridges will have now started to be kept in open-topped pens in preparation for the shooting season on 1 October and so large numbers of these birds will soon no longer be considered 'captive', although they are not expected to move far from release sites. The risks from shooting formerly captive wild gamebirds (starting in October) and risks from gathering up (starting in late January/early February) are not within the scope of this assessment. This risk assessment will be updated to consider the shooting of pheasants and partridge in more detail over the coming weeks as the season draws closer, considering the epidemiological situation at that time. The gamebird shooting season started on 12 August in GB for grouse and snipe, which are wild game and so not penned or released.

**The risk assessment concluded there was no additional risk above the background risk (low) to poultry premises or captive birds posed by allowing shooting of wild game (grouse and snipe) in August 2022, outside of disease restriction zones (protection or surveillance zone).**

## **Risk questions**

What is the likelihood of increasing the risk of geographical spread of birds infected with avian influenza as a result of shooting certain wild birds (wild birds and waterfowl as game) in August 2022?

Are there specific geographic areas or types of activity where this risk would be significantly increased in August 2022?

## **Assumptions**

This assessment does not consider the risk to public health of handling shot game birds or consumption of meat from infected birds.

The assessment does not consider the risk posed to the wider wild bird population through the active release of gamebirds. This will be covered elsewhere.

The law protects all wild birds and states that they cannot be killed or taken except in certain circumstances, for example, during the open seasons for huntable species or under the authority of a licence. Gamebirds can only be killed or taken at certain times of

the year, known as the 'open season'. The open season is different for different species of gamebird. People should only be shooting or disturbing wild birds and gamebirds in accordance with the law, not just because of the risks associated with avian influenza but as a matter of common sense.

When shooting, hunters need to be careful about good hygiene, particularly if shooting within or near to areas currently subject to restrictions due to HPAI H5N1.

The movement of gamebird meat / carcasses is not covered by any requirements for the restriction zones.

Users of the countryside are unlikely to effectively cleanse and disinfect their vehicles, footwear, clothes or equipment when entering or leaving land occupied by livestock and poultry. While gundogs may act as mechanical transporters of fomites and should be washed (with a pet appropriate shampoo) after being out, it is unlikely this is done in a systematic way.

People comply with whatever measures are in force in the affected area. These vary between outbreaks but may include restricting access to Infected Premises, or specific rules for disinfection.

## **Hazard identification**

The hazard identified is the avian influenza virus, HPAI H5N1 subtype, as the predominant subtype isolated from the UK during the current season to date (H5N8 was detected in one mute swan in November, but not since).

Elsewhere, earlier in the season, HPAI H5N8 was detected in domestic poultry in Albania and Denmark, and in wild birds in Denmark, France, the Netherlands, Serbia and Montenegro, Slovakia, Denmark and Sweden. H5N5 was detected in wild birds in Norway and H5N2 in was detected in domestic birds in Poland, and wild birds in Germany and Serbia, and H5N3 in wild birds in Germany. These findings in Continental Europe become less significant for UK following the end of the migratory period (typically February). The World Organisation for Animal Health/World Health Organisation Reference Laboratory (WOAH/WHO RL) in Weybridge has undertaken some sequence analysis of the GB virus; it is concluded that whilst there are notable differences to contemporary H5Nx viruses, the UK H5N1 virus demonstrates no strong correlates for specific increased affinity for humans.

There are gaps in knowledge with regards to whether there are species of wild waterfowl that may not show clinical signs of infection; the increasing proportion of *Accipitriformes* and *Passeriformes* that have been infected with the virus suggests that the virus could circulate in non-migratory wild birds. There is also limited information regarding H5Nx infection in pigeons, although there has been observable morbidity and/or mortality in the small number of cases reported this 2021 to 2022 season.

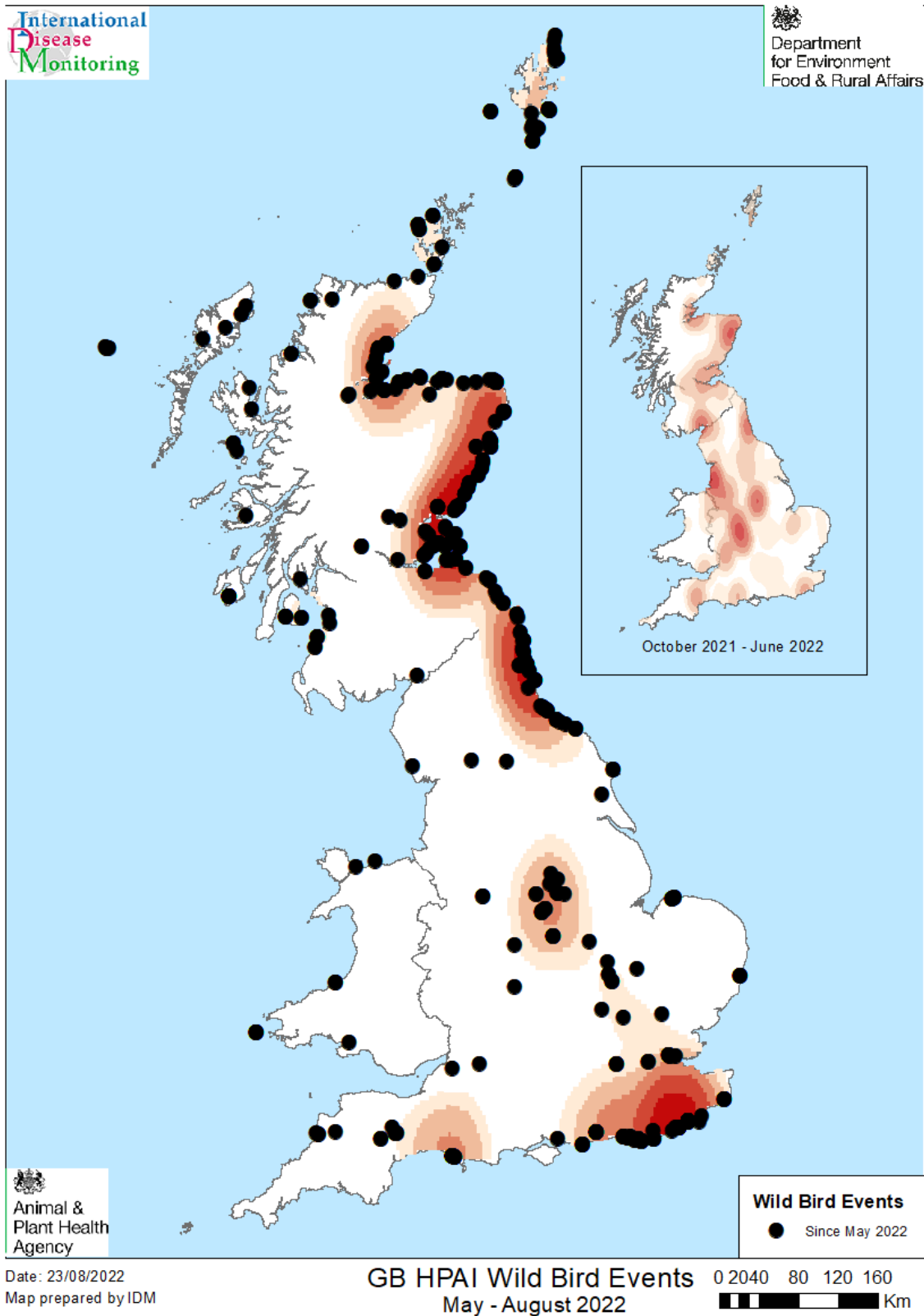
Likelihood of spill-over from infected poultry back to wild birds is considered very low. Poultry keepers have been responding swiftly to the first clinical signs in the birds and the disease control measures are designed to stop spread from carcasses and to dispose of them safely.

Expert opinion is that the virus will retain infectivity in the environment at low temperatures. As we progress through the remaining summer season, increased temperatures, sunlight intensity and day length mean virus survival in the environment will be low, such that the majority of the environmental risk of avian influenza virus would be expected to be low. However, cases in wild birds in both coastal and inland locations continue to be detected through the summer which is unprecedented (Figure 1).

There is good confidence that given the coverage of wild bird submissions and the positive cases (Figure 2) the surveillance system will broadly be able to detect the areas with greatest infection pressure, even if there is some nuance to the detail of individual bird numbers.

**Figure 1**

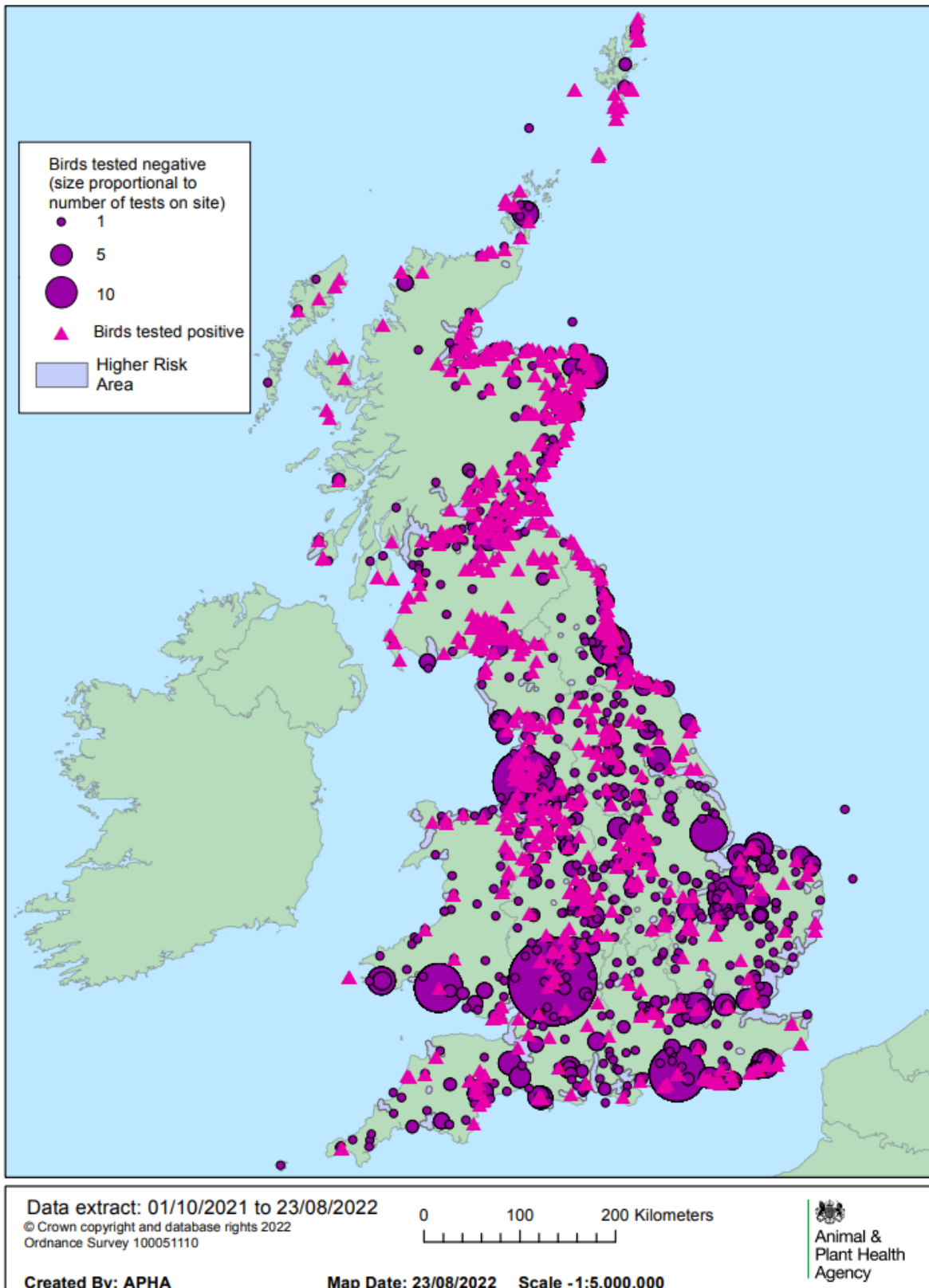
Map of Great Britain showing the relative density of HPAI H5 findings in wild birds as shading from May to July 2022, and the most recent findings reported in July as black dots. Inset map shows the relative densities of HPAI H5 findings in wild birds from October 2021 to 23 August 2022.



**Figure 2**

Map of wild bird submissions, higher risk areas and cases positive for HPAI H5N1 from October 2021 to 23 August 2022.

### Wild bird submissions and cases positive for HPAI H5N1 From October 2021



# Risk assessment

## Background

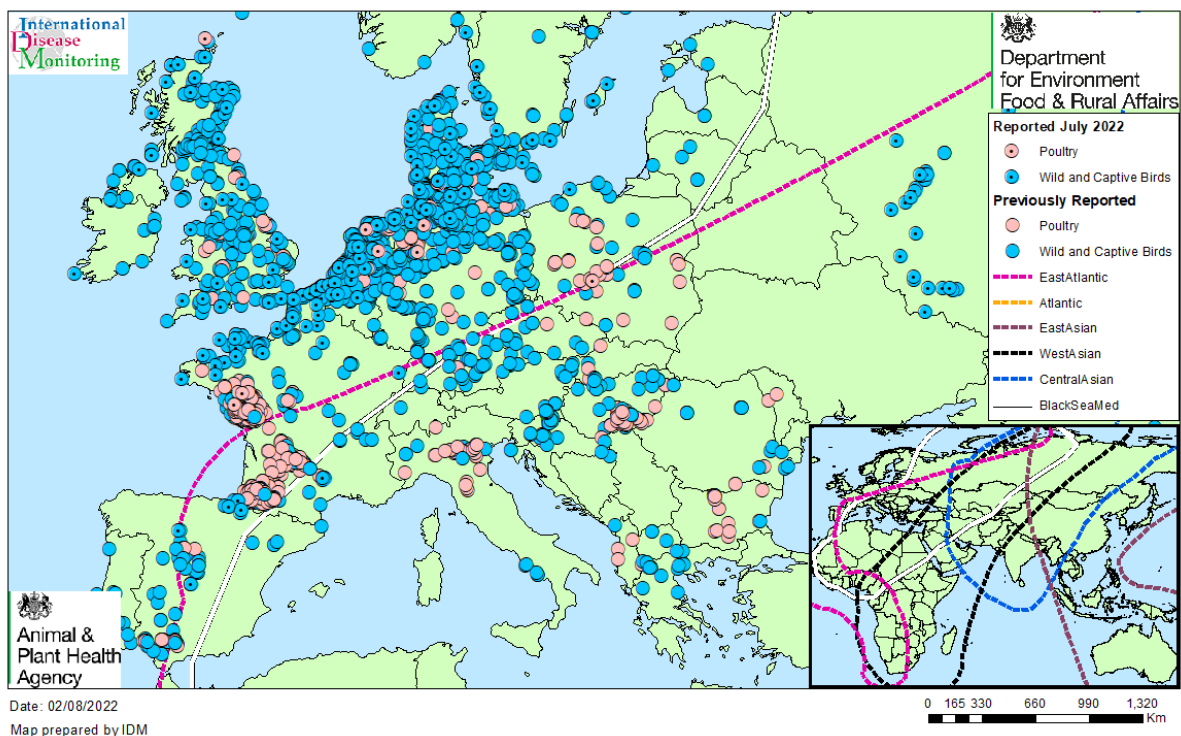
The first report this (2021 to 2022) season of HPAI H5N1 in the UK was in a wild bird rescue centre in Worcester on 26 October 2021. To 23 August 2022, HPAI H5N1 has been confirmed at 111 poultry and captive bird premises in England, 11 premises in Scotland (including one in the Shetland Islands) and five premises in Wales. Migratory wild waterfowl have departed in large numbers from late March and are expected to start to return in August and September through to December. To 23 August 2022, there have been 1,558 HPAI H5 detections in wild birds, in 365 locations involving 61 species in 82 counties. The species of wild birds affected by HPAI in mainland Great Britain have varied throughout the current 2021 to 2022 season, including a greater variety of wild bird species overall compared to previous seasons. An increasing proportion of birds of prey/raptor species (Accipitriformes) and other resident species (Passeriformes, Columbiformes) have become infected as the outbreak has progressed. More recently, many seabirds including gannets, gulls, terns, guillemots and great skua have become infected throughout summer 2022 in an unprecedented epizootic. Given the continuing reports of wild bird cases of HPAI H5N1 across GB, the domestic poultry and captive bird populations in GB remain under infection pressure, which we have not previously observed during the summer months. Sedentary birds (such as black headed gulls) may play a role in the mechanical spread of fomites, and environmental contamination is likely to be substantial around seabird breeding areas. The risk of HPAI H5 infection in wild birds in GB was reduced from high to **MEDIUM** on 23 May 2022 as a result of the decreasing infection pressure in wild bird species and the reduced environmental contamination/virus survivability due to warmer temperatures and extended periods of high intensity sunlight. The 2021 to 2022 HPAI season has had an uncharacteristically long tail to the epizootic in GB with an order shift in the species of birds affected, as described in [preliminary outbreak assessments](#), and an unprecedented third peak in wild birds across Europe, with seabirds heavily represented, likely due to breeding patterns for the time of year (see Figure 3 for recent reports in Europe).

Given the uncoupling of wild bird infection pressure on poultry risk and the high environmental temperatures, the risk of HPAI exposure to poultry and captive birds across the whole of GB has recently been reduced to **LOW** (with low uncertainty for stringent biosecurity measures, but high uncertainty where biosecurity is sub-optimal).

There are no restrictions on hunting or shooting for disease control reasons either in disease control zones or disease prevention zones (AIPZ).

**Figure 3**

Map of Europe showing the HPAI outbreaks and cases in poultry (pink) and non-poultry (blue) between May 2022 and 01 August 2022. Reports from July are shown with central black dots.



**Highly Pathogenic Avian Influenza in Poultry, Captive and Wild Birds  
January - August 2022**

Overlay: migratory bird flyways

(WOAH Data Only)

There are considered to be 3 main types of shooting that could impact on the geographic spread of wild birds infected with HPAIV:

- those where wild waterfowl are shot during their flight from resting areas (wildfowling) and which for the purposes of this assessment includes shooting ducks and geese generally, but also birds such as snipe
- those where wild birds (such as grouse which are hefted on moorland), and formally captive wild birds (such as pheasants and partridges) are driven and shot (driven game shooting)
- shooting woodpigeon under a general licence to prevent serious damage

The game drives use beaters, and dogs are likely to be present at all types of shoot to collect the dead birds. This risk of infection of dogs through infected birds is not considered here, although it is noted that many wild carnivores have been infected globally through scavenging infected wild bird carcasses.



## **Entry assessment - Probability HPAI H5 is still present in wild birds in GB**

The probability of entry of HPAI H5 virus into GB at this unprecedented late stage of this year's epizootic is considering the likely introduction of infection from the areas with high infection pressure into other wild birds, rather than the entry of new viral strains from outside GB. At this stage of the season (August), the wild migratory ducks and geese which brought the HPAI H5 virus into GB have long since left. Instead, the focus in the entry assessment is now on the probability that HPAI H5 is still circulating in wild birds in GB and can therefore be introduced to new areas.

The HPAI H5 virus is currently circulating in sea birds such as gannets, auks, skuas, terns and gulls which breed in colonies either on cliffs or in coastal lagoons. There are still cases of H5N1 in sedentary ducks, geese, raptors, gulls, moorhens and mute swans inland, albeit detected in relatively small numbers compared to coastal areas.

The overall national risk of wild birds in GB being infected is currently MEDIUM (occurs regularly in GB). This risk varies across GB with higher risks at coastal sites than inland. The virus is almost certain to continue to circulate in wild birds in GB over the next month, although there is some uncertainty as to whether infection rates will fall significantly prior to migratory waterbirds returning to the UK to overwinter in the autumn. It is anticipated that seabirds will begin to disperse from their breeding sites and the auks are already departing for the open sea, although the gannets, gulls and skua may remain until September. An HPAI epizootic of this length of time and affecting so many species of different habitats has not been recorded before.

As bridging species, gulls have long daily flight patterns between feeding sites, such as open farmland or rubbish tips, and their night roosts such as reservoirs and gravel pits. As well as being infected themselves, they are likely to have a role in transporting fomites from areas where there is environmental contamination. Wader bird species (including snipe) which are also on the move at this time of year (late July/August) may also be infected, as has been observed in three unidentified wader bird species (Scolopacidae) (which could include snipe) in Germany earlier in the season; though HPAI H5N1 has not yet been detected in snipe in GB this season, this could be due to their diminutive size and camouflaging plumage making them difficult to find. Although wader bird species are more likely to frequent coastal sites, some will visit inland waters over the late summer and early autumn.

## **Exposure assessment**

The pathways by which shooting could increase the risk to poultry or captive birds being infected with HPAI H5N1 are:

- Increased human activity in the countryside in areas populated by quarry species including walking and driving vehicles over potentially contaminated land.
- Dispersal of bird populations outside of their normal home range.

- Gundogs as mechanical vectors of fomites.
- Handling and removal of carcasses of shot birds, possibly transporting them over a long distance and/or putting them into the food chain/incorrectly disposing of feathers or offal.
- Operatives who work in the poultry industry and engage in shooting activity without total separation of activities (including dogs).

These pathways will have varying degrees of risk level, and some elements will also apply to the actions of other people enjoying countryside pursuits, not just for shooting activities.

The risk to public health through handling these shot birds is not considered here. It is important to emphasise that the strain involved in the current cases in GB is considered to present a very low risk to public health. However, HPAI H5N8 virus circulating last season did cause spill-over events into foxes and seals and HPAI H5N1 virus circulating this season has spilled over into foxes and seals in Europe and foxes, skunks, coyotes, racoons, seals, otters in the USA and Canada. The naturally infected foxes showed neurological signs. Therefore, the risk to the general public is still considered by the UK Health Security Agency (UKHSA) to be very low and not negligible.

### **Wildfowling**

Shooting of ducks and geese will not start until 1 September but shooting of snipe commenced on 12 August. Snipe inhabit marshes, wet grasslands and moorlands alongside other waterfowl, and in winter resident birds are joined by birds from northern Europe.

Snipe are allowed to be hunted and therefore shooting of infected snipe is possible over the next few months. Nevertheless, the relatively low numbers involved, and the solitary nature of snipe, means onward spread of infection is not likely in the coming months if dispersed. Onward spread of infection may be more likely in autumn and winter for species such as snipe when they may fly further and may be joined by migrating snipe from Europe. Other species of wild waterfowl which may be shot as game, such as mallards, can also be infected by HPAI H5N1 and not demonstrating clinical signs, but as a resident species associated with inland fresh water rather than coastal sites, they are again a low risk for exposure to HPAI.

Infection with HPAI H5N1 (without clinical signs) in wild waterfowl which are disturbed by shooting activities even over a short distance, may present a risk to poultry premises in the area, but this may not significantly increase the overall LOW risk of exposure of poultry. Nonetheless, bridging species flying over or visiting sites play an important role.

Expert opinion (Defra's Ornithologists Expert Panel, 2016, unchanged in 2022) is that the relatively low level of normal wildfowling activity has a minimal impact on immediate long-distance dispersal of birds around a region, above their normal daily movements, with a likely local and temporary redistribution of birds. Wildfowlers tend to be based close to the roosting areas and will shoot individual birds in flight with accuracy rather than random

shooting at a group of roosting birds. Therefore, the shooting of snipe represents a very low risk of increasing (above existing levels) the geographic spread of wild birds infected with avian influenza over long distances or into new areas. If birds are affected clinically by infection with HPAI H5N1, they may be less likely to fly and therefore are less likely to be shot.

### **Driven game shooting**

This form of shooting is usually confined to pheasant, partridge and grouse shooting. The gamebird open season for grouse starts in England, Scotland and Wales on 12 August, and in pheasants and partridges on 1 October.

On the shoot day, a team of shooters, or 'guns', line out at numbered pegs. A group of beaters and their dogs move through areas of woodland or covert, flushing the game birds ahead of them. When the birds break cover and fly high over the line of Guns they may be shot. Shot game is retrieved quickly by pickers-up and gundogs directed to where the shot game falls. Expert opinion considers that these birds usually fly a distance of 300-400 yards from one area of cover to another and are not flying over long distances. A large number of people will be involved in a shoot of this sort. This activity will disturb birds deliberately over a relatively short distance.

Captive pheasants and partridges will have now started to be kept in open-topped pens in preparation for releasing them prior shooting season on 1 October. Once released large numbers of these birds will be free-ranging and no longer 'captive' but they will likely remain near the point of release as the gamekeeper will continue feeding them. This risk assessment will be updated to consider the shooting of pheasants and partridge in more detail over the coming weeks as the season draws closer, considering the epidemiological situation at that time.

Pheasants, grouse and partridges are members of the Phasianidae family and are related to Galliforme poultry. Therefore, they will likely show clinical signs when infected with HPAI H5N1 and will be unlikely to fly when clinically affected.

The shooting of grouse is considered to present a very low risk of increasing the geographic spread of wild birds infected with avian influenza over long distances or into new areas as these birds are not dispersed over long distances.

### **Pigeon shooting**

Pigeons are a major agricultural bird pest. Shooting wood-and feral pigeons is authorised under a general licence issued by the licencing authorities in England, Wales, Scotland and Northern Ireland. Individuals do not have to apply for these licences but must follow the conditions governing when and how they can undertake lethal control of wild birds. Individuals who cannot comply with the conditions of a general licence may apply to the licencing authority for a bespoke general licence.

Pigeons have not been identified as a species which is playing an active role in the transmission of avian influenza viruses to other bird species. From almost 4,000 reports of HPAI H5 in wild birds globally in the 2021 to 2022 season, only nine of these reports have concerned pigeons or doves. These were in Belgium, France, Germany, Norway, Russia, Spain and Wales. Thus, pigeons have been found to be infected occasionally and may act as transporters of fomites so they cannot be entirely ruled out.

The licence user must have made reasonable endeavours to use alternative lawful methods before engaging in lethal control of wood pigeon. Non-lethal scaring will be in place at this time of year on agricultural crops. Where appropriate, this may be supplemented by lethal shooting to increase its effectiveness; under a General Licence for those species listed upon it; individual licence for others; and open season for some (geese and duck species, Schedule 2 of the Wildlife and Countryside Act, 1981).

Non-lethal scaring is designed to deter birds from the crop and thus will increase local movements. Lethal control of wood pigeons can only be undertaken to prevent serious damage and may also increase local movements. However, unless undertaken in a highly co-ordinated and intensive way over a wide area it is unlikely to increase dispersal of birds to greater distances; they tend to remain in the same area, but frequency of movement increases.

This activity is considered to present a very low risk for dispersal of disease because of the refractivity of this species to infection. There is often mention of the impact of such activities on non-target avian species, and disturbance caused to these. Expert opinion (Defra's Ornithologists Expert Panel, 2016) is that there is little evidence either way.

### **Other wild bird control**

Gulls cannot be lethally controlled under a general licence in England. Individuals wishing to control gulls must apply to Natural England for a licence.

Certain corvid species can be controlled under the general licence. Shooting the birds themselves, when the carcasses are not retrieved, may leave a source of contamination for scavengers, particularly mammals such as foxes or birds of prey where spill-over of HPAI H5N8 has been observed in the last season and H5N1 spill-over has been observed this season in the Netherlands.

### **Use of dogs**

We are not aware of any dogs becoming infected with avian influenza by retrieving shot wildfowl or gamebirds. Although dogs are not natural hosts for avian influenza, a large number of carnivorous mammals (foxes, skunks, coyotes, racoons, seals, otters) that scavenge bird carcasses have been infected this season particularly in Canada and the USA. All precautions should be taken to reduce exposure to shot bird carcasses and dogs should not be allowed to eat shot wild bird carcasses. Poultry farmers with dogs should also be aware of both the fomite risk and the direct infection risk (e.g., they should not take their dog for walks where it will come into contact with wild waterfowl, and then allow the dog close contact with the farmed flocks).

## **Use of decoys**

The use of live birds as decoys for shooting is illegal under the Wildlife and Countryside Act, 1981. Some licensed live decoys may be used in Larsen traps, but these are unlikely to be moved from their current sites. Plastic decoys should be cleaned between use.

## **Consequence assessment**

The current HPAI H5N1 virion is highly infectious and pathogenic to poultry, and it is assumed poultry are infected given exposure. Each new infected premises with domestic poultry present, which are considered commercial, can lead to trade measures and movement restrictions which has an impact on our wider ability to trade in poultry and poultry-related products with third countries.

## **Risk management options**

In addition, there are a number of good practices to follow which can help limit any potential increase in the risk of spreading the virus:

- hunters' associations should inform their members about how to recognise the presence of avian influenza in wild birds, bearing in mind that most wildlife do not show external clinical signs of the disease; one important indicator of the possible presence of avian influenza is multiple deaths of birds in or close to the same location
- found dead birds should not be handled without proper protection such as gloves (or plastic bags or other forms of hand protection)
- regular cleansing and disinfection of equipment including clothing and boots, particularly if the person has any contact with a poultry premises
- all hunters should report findings of any dead wild birds. In particular, any wild ducks, wild geese, swans, gulls or birds of prey to the Defra helpline (Tel: 03459 33 55 77); they will arrange for the transport of targeted carcasses to laboratories for analysis

## **Final risk level**

The activities described in this rapid risk assessment do not significantly increase the risk level already present, as it is considered there is a very low level of wide dispersal of infected wild birds as a consequence of these activities.

These activities do not significantly increase the risk for long distance dispersal beyond routine movement of infected wild birds, if present. However, these activities could

increase the risk locally to other flocks, if there was a high prevalence of avian influenza present in the wild birds.

## Conclusion

Expert opinion (Defra's Ornithologists Expert Panel, 2016) agreed that in this scenario, wildfowling or more general shooting of ducks and geese would not significantly increase the risk for immediate long distance geographic spread of avian influenza infected wild birds. The evidence supporting this opinion has not changed from 2016 to present. There is already a LOW risk of exposure of poultry from the wild birds present. Driven game shoots are considered an even lower risk than wildfowling and shooting of ducks and geese, and woodpigeon shooting is considered to be lower still. Other wild bird control activities used on a poultry farm should be carried out with care ensuring carcasses are collected and disposed of safely to avoid attracting gull or corvid species. Any of these activities would, nevertheless, increase the risk of localised spread if carried out within a restricted area where there is known infection present and particularly if there are no C&D measures in place.

The gamebird shooting season started on 12 August for grouse and snipe in GB.

This assessment is not considering the public health risk associated with collecting or handling game bird or waterfowl carcasses. The European Centre for Disease Prevention and Control (ECDC)<sup>2</sup>, UKHSA and the FSA/FSS has confirmed the risk to the public of this strain is VERY LOW.

## References

Defra's Ornithologists Expert Panel (2016), comprising experts from BTO, RSPB, WWT, JNCC, SNH, BASC, SG, WG, APHA, DAERA, NRW, NE and others, met on 19<sup>th</sup> December 2016.

BASC (2022) [Pest and Predator Control - BASC](#) (Accessed 29/07/2022)

Wildlife and Countryside Act (1981)

<https://www.legislation.gov.uk/ukpga/1981/69/schedule/2>

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<sup>2</sup> [Avian influenza overview: Latest situation update of the avian influenza situation in EU/EEA \(europa.eu\)](#)