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HPAI H5N1 in a Mute Swan (*Cygnus olor*)

in Scotland

(Preliminary risk assessment)

Version 1

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1 Summary

A dead swan, found on the coast in Cellardyke, Fife, Scotland, as a part of intensified surveillance programme in GB tested positive for HPAI H5N1 virus. The swan was tentatively identified as a Mute Swan (*Cygnus olor*). This event was not unexpected as our previous risk assessments have considered that the virus may be detected in the UK at some point in the future.

Many uncertainties still remain with regard to the geographic distribution or spread of the virus in Asia, Europe, Africa and beyond, and further developments are likely. While many uncertainties remain with regard to species susceptibility and the ecology of the virus, intensified surveillance of wild and domestic birds in the UK suggest that this event was possibly a recent point introduction of the virus. On this basis and from the negative results of the intensified surveillance in the UK so far it would be disproportionate to have a nationwide housing policy for domestic birds.

However, this event in Fife, Scotland demonstrated that level of risk has increased to the point that may warrant housing of birds for a limited period of time within a specified region outside the surveillance zone as has been planned. Other related decisions that may applied in this specified region should also reflect this level of risk. Other measures include enhanced biosecurity by poultry keepers, raised awareness and increased wild bird surveillance within the specified areas.

Future developments in the UK will be kept under review and reviewed as more information becomes available.

2 Disease Report in a Mute Swan (*Cygnus olor*)

A dead Mute Swan was found on the 29th March 2006 on a slipway on the coast at Cellardyke, Fife, Scotland as a part of intensified surveillance programme in GB which started on the 21st February 2006. The swan was reported to be a Mute Swan (*Cygnus olor*). HPAI H5 was confirmed on 5 April 2006 in tissue samples using RT-PCR. HPAI H5N1 virus was confirmed on 6 April 2006 using virus isolation.

In accordance with a recent EU decision the Scottish Executive has put in place a Protection Zone of a minimum of three kilometres radius and a Surveillance Zone of 10 kilometres.

2.1 Situation assessment

The Mute Swans breeding in the UK are largely sedentary, few movements within Britain have exceeded 50 Km. Only in very severe winters do birds migrate from or to mainland Europe, the last record of this movement was during an extensive period of cold weather in Britain in 1962/63. Mute Swan recoveries showed a distinct pattern of movement centring on southeast Europe with birds from Netherlands and Denmark, as well as movements to and from France and the English south coast. Although Mute Swans in many parts of the world are migratory, the population in Great Britain is considered to be self-contained resident unit with very little interchange with continent. In fact, little interchange between Great Britain (with approximate population of 40k) and the Republic of Ireland (with approximate population of 10k) (Wernham and others, 2002).

The dead swan was not ringed, therefore it is not possible to say with confidence where it originated from, that is, the UK or abroad. Meanwhile, the expert ornithologists consider that number of Mute Swans arriving from abroad would be small. In Scotland, immigrant Mute Swans are rare with some 12 individuals ever recorded. However, some local short-distance movements of Mute swans may occur along the east coast of Scotland.

Mute swans usually cohabit with other free living wild birds and wildfowl. In the case of harbour-living swans in Scotland, eider and mallard ducks are likely to be the most common cohabitants. Intensive surveillance of 3,397 samples collected from either live or dead wild birds showed no presence of the virus in the UK until this detection. No virus has been detected in samples collected from domestic poultry in the UK so far.

Information from other affected countries suggests natural infection with the virus has so far been detected in either single or a few free living wild birds such as Goshawk (*Accipiter gentilis*), Gulls (*Larus* sp.), buzzards (*Buteo buteo*), Feral pigeons (*Columbia livia*), Doves (*Streptopelia* spp), Eurasian Tree sparrows (*Passer montanus*), Black-billed Magpies (*Pica pica*) and Rook (*Corvus frugilegus*) (National Wildlife Health Center, 2006).

Historically, the highly pathogenic avian influenza (HPAI) viruses of H5 or H7 subtypes have been associated with most severe outbreaks of avian influenza in domestic poultry (Easterday and others, 1997). However, transmission of the AI viruses from waterfowl to other avian species appear to be intermittent demonstrating that host specificity also include a limited ability to infect and generate diseases in aberrant (incidental hosts) (Perkins and Swayne, 2002).

Provisional molecular genetic studies of the virus isolated from the mute swan in Scotland suggest that this isolate groups very closely with those viruses that have been detected in wild birds in Europe, notably in Germany. This may suggest recent introduction to the UK following the movement of the virus into western Europe in February 2006. As we have previously indicated this introduction was not unexpected from the knowledge of migratory patterns of birds to the UK from the affected areas in Europe.

The evidence from Europe is that swans may represent a very good indicator species of infection. In total, 428 samples from swans have been collected in Great Britain from 21 February until 1 April 2006 (i.e. 347 samples in England; 74 samples in Scotland; 7 samples in Wales). Given that no positive samples have been detected so far in much more dense populations of swans in England, this would suggest that infection is not widespread in the UK. While there may be as yet undetected foci of infection we have no evidence of widespread infection in wild bird population in general in the UK.

3 Conclusions

Many uncertainties still remain with regard to the geographic distribution of the virus in Asia, Europe, Africa and beyond and further developments are likely. Our previous risk assessments have considered that the virus may be detected in the UK at some point in the future.

While many uncertainties remain with regard to species susceptibility and the ecology of the virus, intensified surveillance of wild and domestic birds in the UK suggests that this event was possibly a recent point introduction of the virus. On this basis and from the negative results of the intensified surveillance so far it would be disproportionate to have a nationwide housing policy for domestic birds.

However, this event in Fife, Scotland demonstrated that level of risk has increased to the point that may warrant housing of birds for a limited period of time within a specified region outside the surveillance zone as has been planned. Other related decisions that may applied in this specified region should also reflect this level of risk. Other measures include enhanced biosecurity by poultry keepers, raised awareness and increased wild bird surveillance within the specified areas.

Future developments and the results of the continued intensified surveillance for AI viruses in Great Britain will be kept under constant review.

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