

# Avian Influenza

The RSPB, BirdLife International, WWT, BTO and National Trust have updated their joint statement on avian influenza (January 2007). This gives the background to the disease and its spread, and indicates the risks and consequences associated with the virus.

Government and non-governmental organisations are jointly discussing these issues and will continue to do so.

**The joint statement reads:**

## Background

There are numerous strains of avian influenza (bird 'flu) viruses, many of which circulate in wild birds at low levels, but which can occur more frequently in waterbirds.

The vast majority of these viruses within wild bird populations are relatively benign.

Highly pathogenic (disease-causing) avian influenza viruses, including the H5N1 strain, which is currently causing concern, regularly occur in domestic poultry flocks and can cause high mortality (up to 100%), but are very rare in wild birds.

Genetic research suggests that the current strain of H5N1 evolved in domestic poultry in southeast Asia through mutation of low pathogenic strains. Rapid spread of avian influenza is promoted in domestic flocks due to the density of birds and the consequent close contact with faecal and other secretions through which the virus can be transmitted.

Although the first cases of H5N1 were found in poultry in 1997, the greatest geographical spread of the disease has occurred since 2003. The disease is now considered to be endemic in poultry in some areas of southeast Asia and has been recorded in poultry in countries of south-east Asia, central and southern Asia, the Middle East, Europe, and north-east and west Africa.

Husbandry methods in south east Asia where domestic flocks are often allowed to mix freely with wild birds, especially waterbirds, will have facilitated the transmission of the virus to wild birds.

The die-off of wild birds at Lake Qinghai in China in the spring of 2005 probably represented the most significant spillover of the disease to wildlife.

Since then the disease has been recorded in sick or dead wild birds in a number of regions most notably in Mongolia, Russia, the Black Sea region and more recently across many European countries, including a single case in a dead whooper swan in the UK.

## Causes of concern

The spread of avian influenza H5N1 across Asia and into Europe and Africa poses challenges to human health, the poultry industry and the conservation of wild birds.

## Risks to poultry

Avian influenza H5N1 is primarily a disease of poultry. The disease has had serious consequences for the poultry industries and backyard flocks of many countries. This has had negative impacts on local economies and created the potential for food shortages for those depending on poultry and eggs as a source of protein or income.

Within the UK, the main threat is to the poultry industry and actions taken by the UK

Government are targeted at minimising this risk, by maximising vigilance and having in place a contingency plan should the virus arrive and become established.

## **Risks to humans**

Given that the disease has been widespread in poultry for a number of years, there have been relatively few human cases compared with the huge number of contacts between humans and infected poultry.

Almost without exception, the 250+ recorded H5N1 infections in humans have occurred in people who have been closely associated with infected poultry. Although unconfirmed by health authorities, it is speculated that a few cases in Turkey and Azerbaijan were due to handling dead infected wild birds, the latter being people who plucked dead infected swans for their feathers.

The risk to human health from wild birds in the UK is remote and can be minimised by practicing normal basic hygiene and avoiding contact with sick or dead birds.

At present, the virus is good at infecting birds and poor at infecting humans. However, there is a theoretical possibility that this virus could mutate or recombine into one that might be easily transmitted from human to human, sparking a pandemic. If this happens, then it is most likely to happen where there are high densities of people and poultry eg. in south-east Asia or Africa.

It is hard to predict if this will ever happen with H5N1; the next pandemic could well be caused by another unrelated strain of avian or human influenza virus. If the virus mutates, a human pandemic won't be spread by migratory birds, it will be spread by international travel. Birds will not be the source of infection; humans will.

## **Risks to wild birds**

The effect the virus will have on wild bird populations is currently unknown, although we know that it has caused high mortality for some species e.g. Bar-headed geese. There are also indirect effects. For example, there are reports of killing or disturbing wild birds and destroying nests and habitats in misguided attempts to control the disease. Perhaps an even greater threat will be the negative perception or unjustified fear that people may develop of wild birds, and this may have adverse knock-on effects for conservation.

## **Spread of the virus**

The H5N1 virus has spread geographically, causing outbreaks in southeast Asia, central and southern Asia, the Middle East, Europe, and north east and west Africa.

There are several possible routes by which the virus may be spread, including:

- the movement (legal and illegal) of both poultry and poultry products
- the trade (legal and illegal) in captive wild birds
- mechanical transfer on inanimate objects, such as footwear of humans
- short or long distance movements of wild birds.

All of these have probably been involved to some extent.

## **The role of wild birds**

Media attention has focused almost exclusively on migratory birds as the sole or principal route of transfer. This is unjustified given that epidemiological and genetic studies would indicate that poultry movements account for most of the outbreaks within poultry. However, it appears likely that wild birds have played a role in some cases. For instance, the outbreaks around the Black Sea in 2005 were consistent with the timing and direction of migration from Siberia where there had been outbreaks of the disease in poultry. In addition, the unexpected eruption of cases in wild birds across Europe that occurred in early 2006 was most probably the result of birds fleeing cold weather in the prior affected Black Sea region. This indicates that infected birds were at least capable of flying some distances before dying. It is assumed that wild birds were the source of infection for poultry in single outbreaks in France, Germany and Denmark. The incident in France was most likely the result of mechanical transfer from a site where infected pochard had died, compounded by a breach of biosecurity measures in the industrial premises.

The cases of H5N1 in dead wild birds in some European countries, without concurrent outbreaks in poultry, indicate that H5N1 can be carried by wild birds.

It is speculated that wild birds may be able to carry H5N1 without becoming diseased and would therefore be effective at spreading infection. As yet this remains unproven as most of the limited scientific 'evidence' is based on domestic duck flocks or laboratory infection experiments with non-wild or domestic birds, and on non-migratory tree sparrows in China. The laboratory studies suggest that some species may be able to survive inoculation with the virus, show few clinical signs and shed the virus for some days. However, conditions in the wild are quite different and very little is known about the numbers of wild birds that have been infected with the virus, how long wild birds can survive post infection, how far they can move in this period and for how long they remain infectious. Research is urgently needed to answer these fundamental questions. Even if wild birds are capable of spreading the virus, the prevalence (i.e. proportion of the population carrying the virus at any one time) of infected wild birds appears to be very low as widespread surveillance of living wild birds across Europe has not detected the virus.

## **The role of poultry, their products, inanimate objects and wild bird trade**

Chickens are traded extensively around the world and represent the most 'mobile' bird on the planet. The movements of poultry and poultry products, and of captive wild birds for trade, are known causes of transfer of infection and few doubt that unrestricted poultry movements (legal and illegal) have played a major role in the spread of the disease. Moreover, many outbreaks are *not* consistent with wild bird movements.

Integrated poultry and fish-farming systems, where chicken or duck manure is used as fertiliser and fish feed, are widespread throughout southeast Asia and occur in eastern Europe. Poultry manure is widely used in Europe as fertiliser on agricultural fields. Such systems are a possible mechanism for the propagation of the disease. Experience in the US poultry industry with H5N2, a less virulent strain of avian influenza, found that virus transmission occurred through movements of live and dead chickens, contaminated equipment and vehicles, contaminated eggs, feed, water, insect vectors and human vectors. In fact, anything that had come into contact with contaminated manure was a potential

source of infection. Far more attention needs to be given to all of these routes if the disease is to be controlled.

## **Control of the disease**

Regardless of the source of infection, the best way to control the disease is through continued surveillance in wild and domestic birds, improved biosecurity, good public information, effective border controls, and swift action to contain an outbreak through efficient culls of poultry in the vicinity. The latter action has effectively controlled the few outbreaks in western Europe.

All the major authorities, including the Food and Agriculture Organisation of the United Nations, the World Health Organisation and the UK Government have stated publicly that culls of wild birds would be infeasible and may make the situation worse by dispersing potentially infected individuals and stressing healthy birds, making them more prone to disease.

## **What we are doing to help**

BTO, RSPB, WWT, NT and the British Association for Shooting and Conservation (BASC) are working with government departments to assess the potential risks posed by movements of wild birds, to undertake surveillance and to disseminate guidance for birdwatchers and wildfowlers.

We, and BirdLife International, are providing information to the general public via our websites (and to visitors to RSPB, WWT and NT sites) and lobbying at European Union level to ensure wild bird surveillance is conducted appropriately and that countries do not neglect their conservation obligations. BirdLife is providing scientific, policy and communications support to their partners around the world.

## **Conclusions**

Although avian influenza H5N1 has caused deaths of wild birds, most notably in Europe in early 2006, it remains primarily a disease of poultry.

The major route by which disease has spread remains movements of poultry and their products. However, wild birds have now been implicated in spread of infection too, particularly in western Europe.

The public health risk in developed countries is extremely low. Almost all of the small number of human cases worldwide have been associated with close contact with infected domestic birds eg. slaughtering or living with infected poultry. Improving public awareness and government capacity to control the disease in some developing countries will be key to reducing human health risks.

Avian influenza H5N1 poses a challenge to economy, public health and conservation therefore needing the cooperation and collaboration of multidisciplinary teams from government agencies, non-governmental organizations and the public to help control the disease for the benefit of all.