

## **THE TRUTH ABOUT AVIAN INFLUENZA**

There is a great deal of public interest in the recent outbreaks of Avian flu, partly due to misconceptions and rumours about the virus. BirdLife Botswana is committed to publicising the facts about the issue in the belief that a well-informed public will be our strongest asset in dealing with it.

### **What is avian influenza (bird 'flu or poultry flu)?**

There are at least 144 strains of avian influenza, many of which circulate in wild birds at low levels, but which can occur more frequently in waterbirds. Most have mild effects on poultry and are designated 'Low Pathogenicity Avian Influenza' (LPAI). But the H5 and H7 'subtypes' can cause massive mortality in poultry and are designated 'High Pathogenicity Avian Influenza' (HPAI).

These HPAI viruses do not normally occur in wild birds. They arise in poultry, where intensive rearing and crowded conditions allow the virus to evolve to a highly pathogenic form. Hence HPAI is also called 'poultry flu'. There have been around 21 HPAI outbreaks in poultry flocks worldwide since 1990.

Wild birds can also be infected with, and killed by, HPAI viruses. They appear to acquire the virus through contact with infected poultry or with facilities used by them.

### **What is H5N1?**

The H5N1 virus currently circulating is a High Pathogenicity Avian Influenza (HPAI). This strain of the virus first appeared in Hong Kong in 1997. It evolved in poultry from Low Pathogenicity Avian Influenza (LPAI) viruses that were probably acquired from wild birds.

Conditions in poultry flocks (such as crowding, especially in mixed species groups, and prolonged contact with faeces, saliva and other bodily secretions) keep the viruses circulating as they evolve. The current series of outbreaks began in 2003 in South-east Asia, where a dramatic increase in intensive poultry production is sometimes combined with poor hygiene and bio-security in small "backyard" enterprises. Domestic ducks are commonly turned out to feed in rice fields alongside wildfowl during the day, and confined with other poultry at night, and birds from different areas are brought together in networks of poultry markets.

### **Do migrating wild birds carry H5N1 from country to country?**

There is no concrete evidence that migratory birds have helped transmit the disease between countries or regions, but the possibility cannot be ruled out.

The spread of H5N1 within and beyond South-east Asia appears attributable to movements of infected poultry. The patterns of spread are not consistent with the timing and direction of movements of wild birds.

However, recent outbreaks in Europe have occurred along migratory flyways (including the Danube delta, a great gathering place for migratory waterfowl) during the autumn migration.

At present H5N1 has not been isolated from healthy wild birds, only those that were dead or dying. This suggests that it is highly lethal and that most infected birds would not be capable of migration.

Avian influenza viruses appear to survive best when temperatures fall below 20°C. Outbreaks that coincide with southward, autumn migration may represent resurgences of viral transmission in already affected areas as temperatures decline.

### **How is the virus spread, if not by wild birds?**

There are several ways through which H5N1 might be transmitted, including movements of poultry (and feathers), migrating birds, the trade in wild-caught birds, and the movement of soil/mud on wheels and feet. The relative importance of each of these factors in the transmission of H5N1 is unknown, but to date, all outbreaks that have been investigated have been traced back to poultry movements.

Within south-east Asia, movements of poultry and poultry products are known to have been involved in the virus's spread among flocks and between countries. Outbreaks in China, Kazakhstan and southern Russia are connected by major road and rail routes. The outbreaks in Kazakhstan, Mongolia and Russia occurred in summer, when most wild birds would be moulting and not undertaking long migrations. The involvement of wild birds in these outbreaks thus seems highly unlikely. The source of recent outbreaks in Europe is not known, but movements of poultry and poultry products provide as plausible an explanation as transmission by wild birds.

### **Can people catch H5N1 from wild birds?**

There is no evidence that H5N1 infection in humans has been acquired from wild birds. Human infections have occurred in people who have been closely associated with poultry. Given the number and distribution of outbreaks in domestic poultry and waterfowl, the number of human cases is very small, indicating that the transmission of the virus from poultry to man remains inefficient.

### **So why are there concerns for human health from H5N1?**

Although H5N1 can cause serious disease in people, the virus is hard to catch and so far does not seem to spread from person to person. The concern is that it might evolve into a form that is transmitted easily between people.

In the last 100 years there have been four major pandemics of human influenza A, which killed many people around the world. It is thought that these deadly virus strains arose when bird flu and human influenza viruses came together, possibly in pigs, and

reassorted their genetic material. Continued outbreaks of H5N1 increase the chances of this happening again.

### **What wild bird species are affected by H5N1?**

Primarily ducks, geese and swans, also gulls.

### **Does H5N1 threaten endangered birds?**

The virus at present appears to be lethal to some species of wild birds, and its infection of endangered species could be catastrophic. It is estimated that up to 10 % of the world population of Bar-headed Geese died at Lake Qinghai in China. The main risk to endangered birds will be to those whose small populations concentrate in areas where the virus has become established, especially in poultry that use the same water and food supplies.

There are a large number of globally-threatened waterbird species in South-east Asia and several in South-east Europe whose populations have already been reduced by habitat loss and over-hunting, for which H5N1 could pose an additional risk to their future.

### **Should wild birds be culled to stop the disease spreading?**

Evidence for the involvement of wild birds in spreading the disease is weak. Even if wild birds were found to be playing a major part in spreading the H5N1 virus, attempts to exterminate entire bird populations -by shooting, poisoning, netting and trapping or even explosives- have hardly ever succeeded in eliminating a problem. In fact, such attempts could spread the virus more widely, as survivors disperse to new places, and healthy birds become stressed and more prone to infection.

Species that die from the virus are unlikely to carry the virus long distances, so the reservoir of infection is more likely to be a species showing few or no clinical signs, rather than the ones observed to be sick and dying. Without knowing which species are the reservoir, you cannot even begin to design a culling program.

Control of a wildlife disease through culling is likely only to be successful for diseases with low transmission rates that occur in one species, and where the outbreak is confined to a small area. None of these conditions are met with H5N1: a) avian influenza is highly infectious, b) multiple species are being infected, and c) the disease is spread across much of Central and South East Asia.

The World Health Organisation, Food and Agriculture Organisation and OIE (the World Organisation for Animal Health) agree that control of avian influenza in wild birds by culling is not feasible, and should not be attempted.

### **Should wetlands be drained to deter waterbirds?**

Absolutely not. Apart from their extremely high conservation value, wetlands provide vital ecosystem services like flood control, water purification and nutrient recycling, and the livelihoods of many communities depend on them.

Draining wetlands is not only environmentally disastrous, but also likely to be counterproductive for the same reasons that culling is more likely to spread the Avian Influenza virus than control it. Birds will seek alternative staging places on their migration routes, and wildfowl forced to fly further and endure more crowded conditions along their migration route will become stressed and exhausted, and more prone to infection.

### **So what should be done to prevent the spread of H5N1?**

The key steps are to improve bio-security. In the first instance, this means keeping wild birds apart from poultry, enhanced monitoring and control of poultry movements and markets, and swift culling of infected flocks. Countries currently free of the disease should consider a ban on imports of domestic poultry and wild birds for the pet trade from affected regions. Preventive measures should be focused especially on places where poultry, wild birds, and humans gather.