BirdLife Statement on Avian Influenza

28 February 2006

Key points
BirdLife seeks the rapid and complete removal of the H5N1 virus from the ecosystem. BirdLife is greatly concerned and saddened by the massive economic loss suffered by those communities affected by the virus and dependent on poultry. We also recognise and share the real concerns about a potential human pandemic, as well as, of course, the human death toll from the current infection.

There are several ways in which H5N1 can be spread within and between countries. Three major potential routes are the movements of infected poultry (and poultry products), movements of caged wild birds in trade, and movements of migratory wild birds. Effective responses need to focus on all of these possible means of spread.

Recent H5N1 outbreaks among wild birds in Europe and the Middle East show that wild birds are capable of carrying the virus long distances. An outbreak of H5N1 within a closed turkey farm in Ain, France, close to where an H5N1-infected Common Pochard *Aythya farina* had been found 10 days previously, shows the need for heightened biosecurity even in indoor poultry operations. Many questions remain concerning the effects of the virus on wild birds and how effectively they can spread it to other wild birds or to domestic poultry.

By contrast, recent outbreaks in India, Nigeria and Egypt originated within the poultry industry. Here, as in most other H5N1 outbreaks, there is strong circumstantial evidence that movements of poultry and poultry products are responsible.

As H5N1 continues to spread, there is need for responses to be calm, balanced, prompt and effective. In particular, BirdLife urges:

- Heightened surveillance of migratory wild birds, with collection of as much ecological information as possible in the case of confirmed outbreaks
- Improved biosecurity at all levels within the poultry industry
- Tight controls, backed up by better enforcement, on the movements of poultry products, including fertiliser and feed made from poultry waste
- A continued moratorium on trade in wild birds originating from affected regions
- Full collaboration and sharing of information among those with relevant veterinary, medical, agricultural and environmental expertise.

Deaths of migrant wild birds occur for many reasons other than H5N1. Such deaths need immediate investigation but should not be cause for panic. Culls of wild birds and destruction of their habitat are not appropriate control measures. They are at best ineffective, probably counterproductive and distract from more suitable interventions. They would also cause much negative environmental impact.

The risk of humans contracting H5N1 remains very low, except through close contact with infected birds.

BirdLife believes that greater collaboration between veterinarians, the poultry industry and food, agriculature, health and environment bodies is needed to to tackle the threat of avian 'flu effectively. BirdLife participates actively in a task force on avian influenza comprising scientists and conservationists from nine different international organizations, including four UN bodies, convened by the UNEP Convention on Migratory Species (CMS), BirdLife welcomes the announcement that a scientific assessment of the impact of avian 'flu on wildlife and biodiversity will be carried out at the eighth meeting of the Conference of the Parties to the Convention on Biological Diversity, to be held in Brazil, in March 2006.

Recent outbreaks of H5N1

Originating in poultry, the high-pathogenicity avian influenza (HPAI) virus H5N1 has caused deaths among wild waterbirds at several locations in Asia and most recently in the Middle East and Europe. There have also been recent outbreaks in poultry in Africa, India and Europe.

In the latter half of 2005, it was widely predicted that wild waterbirds—thought to be the most likely species to carry the virus—would spread H5N1 to their non-breeding grounds in South-East and South Asia, Europe, the Middle East, Africa and Australasia.

By February 2006, only a handful of dead wild birds with H5N1 had been discovered in South-East Asia. These were resident species in Hong Kong (where diseased, illegally imported poultry were also found). No cases of H5N1 had been found among migrant birds in their non-breeding grounds in the Philippines, Japan, South Korea, Australia, New Zealand or Africa.

However, two outbreaks had occurred in poultry in Africa. There is strong circumstantial evidence that the first of these, in Nigeria, was through the illegal importation of poultry (possibly from China or Turkey). The second, in Egypt, originated in and is currently confined to the poultry sector. In India, outbreaks in backyard poultry flocks in mid February were apparently caused by the supply of infected birds from a commercial hatchery. At this stage, it is unknown how the disease first appeared in the commercial premises.

By contrast, in Europe and the Middle East, there have been numerous reports of dead wild birds, mainly Mute Swans *Cygnus olor* and other wildfowl, across many countries. These include thousands of birds in Azerbaijan, plus smaller numbers in Bosnia Herzegovina, Bulgaria, Croatia, France, Germany, Greece, Hungary, Italy, Iran, Romania, Slovenia and Turkey. Their near-simultaneous appearance in these countries is likely to be in response to cold weather in regions further to the east, causing birds to move towards warmer climes. The infected birds could have come into contact with the virus in the Black Sea region, where it is known to have been present in poultry flocks for several months.

Autopsies on swans from the Evros delta, Greece, showed that starvation (combined with endoparasite infection) was the likely cause of deaths. Around 20 swans and one Red-breasted Goose in Greece also tested positive for H5N1, but it is believed the virus may not have been the immediate cause of death. It is not known if the infected birds were carrying the virus without symptoms, or were incubating the virus and would later have become ill and died (or recovered).

There was also an intense outbreak in waterfowl in northern Germany, with more than 100 dead birds (mainly swans) testing positive for H5N1 by 24 February, and some indication that the disease was spreading to adjacent areas. This outbreak appears to be separate from those in southern Europe and to have arisen in winter-resident birds. Its origin is as yet unclear and BirdLife welcomes the German Government's determination to investigate the circumstances of the outbreak fully.

The first poultry outbreak in western Europe is at a closed turkey farm in Ain, France—close to where an H5N1 infected Common Pochard *Aythya farina* had been found 10 days previously. The outbreak does show that bringing poultry indoors may not be effective, by itself, in halting the disease's spread. It is not yet clear how, or when, the virus entered the closed farm and it will be important to follow all lines of inquiry to determine the likely source of the outbreak.

The role of wild birds

The European incidents clearly demonstrate that wild birds can carry the virus to new sites after infection—at least during the disease's incubation period, which may be several days. Nevertheless, understanding of the epidemiology of H5N1 in wild birds, and the behaviour of the virus in the wider environment, remain very inadequate. One important, unanswered question is how easily infected wild birds can pass the disease on to other wildfowl or poultry. Data from Croatia show that waterfowl sharing the same ponds as infected swans remained free of the disease, but a sick swan housed with chickens at an Austrian animal rescue centre did pass the infection on.

Earlier outbreaks show a very different pattern to the recent incidents in Europe. This strengthens BirdLife's view that had wild birds been spreading the disease across continents, there would have been trails of dead birds following migration routes. This is clearly not the case—numbers of dead wild swans have not been found in Asia for example. Furthermore, the 'wild bird' theory for the spread of H5N1 provides no explanation as to why certain countries on flight paths of birds from Asia remain flu-free, whilst their neighbours suffer repeated infections, nor of why there is no correlation in the pattern and timing of spread among domestic birds with wild bird migrations.

This conclusion is further supported by the (as yet, limited) information on prevalence of the HPAI H5N1 virus in living wild birds. Only six out of more than 13,000 wild birds tested in China were positive for the virus, whilst 3% of this total had antibodies to H5N1. Elsewhere, no healthy migrant bird has been found to have the disease, out of more than 100,000 tests carried out world-wide. This includes 16,000 over the last decade in Hong Kong, a location so close to widespread infection in poultry in mainland China that it is remarkable that not a single infected live bird has been found. In currently uninfected areas, several thousand migratory waterbirds recently tested in New Zealand, Australia and Canada were all found to be negative for HPAI H5N1. We may assume that many other tests of this kind have been carried out around the world, but that the results have not been made public. In the interests of all those attempting to control the spread of HPAI H5N1, BirdLife believes that all such results, whether positive or negative, should be published and made freely available to researchers.

The European incidents show that wild birds can move the virus, and potentially spread it, over long distances. The previous spread of H5N1 shows that it is essential to consider other transmission routes as well. These include the movements of untreated poultry and poultry products, the re-use of inadequately cleansed transportation crates, the use of infected poultry manure as fertiliser in agriculture and as feed in fish-farms and pig farms, and the trade in wild birds.

Movements of poultry and poultry products
Most outbreaks in south-east Asia can be linked to **movements of poultry** and **poultry products** (or infected material from poultry farms, such as water, mud or soil, on vehicles, or peoples' clothes and shoes). Globally, the most important route of spread remains unrestricted poultry movements. A paper published on 21 February 2006 (Chen et al., "Establishment of multiple sublineages of H5N1 influenza virus in Asia: Implications for pandemic control", *Proceedings of the National Academy of Sciences, 21 February 2006*) analyses the viral lineages and concludes that poultry movements were responsible for multiple reintroductions in South-East Asia, both within and between countries.

Live animal or 'wet' markets may have played a major part in spreading the virus in south-east Asia, according to the UN Food and Agriculture Organisation (FAO), World Organisation for Animal Health (OIE) and World Health Organisation (WHO): "In 1992, live poultry markets in the USA were considered the 'missing link in the epidemiology of influenza'. They were identified as the source of the H5N1 infection in chicken farms in Hong Kong in 1997 when approximately 20% of the chickens in live poultry markets were found to be infected. The same situation was seen in Viet Nam, where the circulation of H5N1 in geese in live bird markets in Hanoi had been documented three years before the 2004 outbreaks in chicken farms." (FAO/OIE/WHO *Consultation on avian influenza and human health: Risk reduction measures in producing, marketing, and living with animals in Asia*, Kuala Lumpur, Malaysia, July 2005).

There is also a huge international trade in poultry—both legal and illegal. The legal trade involves literally millions of hatching eggs and poultry being shipped to destinations world-wide. For example, prior to the outbreaks in Egypt, the country was reported to export 180 million day-old-chicks plus 500,000 mature fowl a year. Almost 12 million live chickens were officially imported into the Ukraine in 2004 and more than 16 million into Romania. In Turkey, one factory has the capacity to produce over 100 million hatching eggs per year, many of them exported to Eastern Europe and the Middle East. Recent outbreaks in India, Nigeria and Egypt originated within the poultry industry, and there is strong circumstantial evidence that movements of poultry and poultry products are responsible.

For obvious reasons, little information is available on the extent of the illegal poultry trade, but recently it was revealed that poultry meat is being illegally imported from Asia into the USA; in October 2005 3,000 chickens were intercepted by Italian customs after being smuggled into the country from China; and in November 2005 the UK authorities revealed that large quantities, possibly hundreds of tonnes, of chicken meat had been illegally imported from China, and fraudulently relabelled before being sold on to food manufacturers across the country. In February 2006, 20 kg of chicken tongues from China were found by customs in Rio de Janeiro, Brazil, and 21 tonnes of (mainly) poultry meat from China were confiscated in southern Spain. These indicate continuing lapses in border controls, despite the widely publicised risks. Illegal poultry movements are reported to be extensive in central Asia. In 2005, Ukraine's State Department of Veterinary Medicine said there had been substantial illegal re-exportation of meat from Ukraine to Russia from third countries.

Illegal trade in cage birds
The widespread illegal trade in cage birds has transported H5N1-infected birds over large distances. For example, customs in Taiwan have intercepted two consignments of infected birds being

smuggled from mainland China. An outbreak of H5N1 at a bird quarantine station in the UK may also be attributable to smuggled birds 'laundered' into a legally imported consignment. In 2004 a pair of Mountain Hawk-eagles *Spizaetus nipalensis* smuggled in hand luggage from Thailand to Belgium were found to have the disease. The most likely source of infection in captive birds is at live animal 'wet' markets, where domestic and wild-caught birds are kept in close proximity, posing a high-risk of cross-contamination.

Faeces as fertiliser and livestock feed
Also alarming, and needing closer investigation, is the widespread practice of using **poultry manure** (chicken, duck and other poultry faeces) in agriculture and aquaculture as **fertiliser**, and in untreated form as food for pigs and fish. Birds infected with the H5N1 virus excrete virus particles in their faeces: putting untreated faeces from infected birds into fish ponds and on to fields provides a potential new source of infection. Although recognised as early as 1988, the risks of this practice for spreading influenza viruses remain little investigated.

Initial investigations reveal that Russian fish farms have recently started using chicken faeces as fertiliser, and this practice is followed in Eastern Europe where poultry faeces are also spread onto agricultural land and discharge inevitably runs off into waterways. Where untreated poultry manure is collected, transported and sold, this could be a highly effective way of spreading the virus. The FAO recommends "that the feeding of poultry manure/poultry litter should be banned in countries affected by or at risk from avian influenza, even if correctly composted, ensiled or dried with heat treatment." It was recently revealed that faeces-derived fertiliser used in Serbia in winter 2006 had originated from China.

Prevention and control
Better surveillance of wild birds, and study of the way that the virus behaves in wild bird populations, are very important. But it is even more important that preventive measures for H5N1 concentrate on better bio-security—surveillance and testing of poultry, controlling the movements and sale of poultry, poultry products and cage birds, regulating the use of poultry manure used in aquaculture and agriculture, and stepping up national and international efforts to control the illegal trade in poultry, poultry products and captive wild birds.

The best veterinary advice concerning issues such as confinement of free-ranging flocks and vaccination should be sought and followed. Vaccination may be effective—providing there is adequate antigen in the vaccine. Poor-quality vaccines stop the signs of the disease but allow the virus to continue replicating, spreading and evolving. There is continuing debate among virologists, veterinarians and politicians over the merits of vaccination.

The role of wild birds must be seen in the much larger context of the global poultry industry and the movements of huge quantities of poultry products around the world. Focusing on wild birds alone is misplaced and a potentially dangerous diversion of energy, effort and resources. Attempts to cull migratory wild birds or destroy their habitat are highly misguided—experience shows that this approach is completely ineffective, and indeed is likely to make matters worse.

Risks to people
Although H5N1 can cause serious disease in people, the virus is hard to catch. Transmission from poultry to human remains difficult, usually involving prolonged and intimate contact, and so far the

virus does not seem to spread from person to person. A major concern is that it might evolve into a form that is transmitted easily between people, thereby provoking a pandemic.

In the last 100 years there have been at least three 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, especially as the current strain of H5N1 is exceptional in that it can pass directly from poultry to humans, without the intervention of an intermediate host.

However, apart from an isolated case in Turkey (when children played with gloves used to handle infected dead 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.

Activities such as bird watching and feeding garden birds are completely safe, if simple common sense precautions are followed. These include avoid touching carcasses of wild birds, and washing hands with soap and water after filling or cleaning bird feeders. Both measures are advisable as birds can carry other potentially dangerous pathogens. Sites of known H5N1 outbreaks should, of course, be avoided.

In countries where H5N1 outbreaks have occurred, people working with poultry or other captive birds need to take stricter precautions and should avoid contact with wild birds as much as possible.

Conservation implications for wild birds

The virus is generally highly pathogenic (causes high level of mortality) to wild birds. Attempts to cull wild birds in misguided attempts to control the disease might adversely affect the conservation status of some species. 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 attempts at culling would spread the virus more widely, as survivors dispersed to new places, and healthy birds became stressed and more prone to infection.

There have been reports in the media of wild birds being demonised. In some countries politicians have called on hunters to wipe out incoming migrant birds. Some governments have reportedly revived plans to drain wetlands, under the pretext of denying waterfowl landing and breeding places. Nests of birds, such as the Barn Swallow *Hirundo rustica,* which breed in close proximity with man have been destroyed in the mistaken belief that this measure will lessen the risk of contracting bird 'flu. None of these measures will control the spread of avian inluenza , instead putting wild birds and other biodiversity in jeopardy.

Two globally threatened bird species may already have been affected. The virus was recently isolated from a Red-breasted Goose *Branta ruficollis* in Greece, and samples from a second individual are currently being tested. This is of concern as 90% of the world population of 88,000 is confined to just five roosts in Romania and Bulgaria, both affected countries. Several dead Dalmatian pelicans *Pelecanus crispus* are currently being tested in Bulgaria. This species is

vulnerable as it breeds in colonies in freshwater wetlands and coastal lagoons. The world population of 15,000 is confined largely to the Baltic and Black Sea regions. Many of the countries in which it breeds area already affected by H5N1. It is also estimated that between 5% and 10% of the world population of the Bar-headed Goose *Anser indicus* perished in the outbreak at Lake Qinghai, in China in spring 2005.

BirdLife International is a member of a task force on avian influenza comprising scientists and conservationists from nine different international organizations including four UN bodies, convened by the UNEP Convention on Migratory Species (CMS), The task force seeks much better data and information on the cause of the spread of the disease. It is convening a meeting in early April to assemble some of the top scientists to examine the latest information on avian influenza.

BirdLife also welcomes the announcement that the first ever scientific assessment of the impact of avian flu on wildlife and biodiversity will be carried out by international experts from around the world in conjunction with the eighth meeting of the Conference of the Parties to the Convention on Biological Diversity, to be held in Curitiba, Brazil, in March 2006.

Box: The effects of H5N1 infection on wild birds

Apart from caged birds, three types of wild bird species have been involved in outbreaks so far:

- Scavenging species (that are likely to forage around poultry farms) such as crows, magpies and recently, in Europe raptors
- Species that often feed (and scavenge) in polluted waterways near towns and farms, including fish-farms, such as some herons, egrets and gulls
- Colonially-nesting or flocking waterfowl that feed in water bodies or in nearby farmland.

There are a number of different possible scenarios for the effects of H5N1 on migrant wild birds:

First, perhaps migrants are infected by H5N1 but show **mild, or no, symptoms** (as demonstrated experimentally in captive Mallards for some specific viral genotypes). If this were the case, infected birds would not die, but would shed the virus in their breeding grounds, on migration and in their non-breeding areas. Poultry outbreaks would accompany the birds in both breeding and non-breeding grounds and on migration. In practice, we have seen limited and localised deaths of wild birds on breeding and wintering grounds, but no evidence of poultry outbreaks following the main migratory routes.

If H5N1 were deadly to most wild birds, but **some could carry it without symptoms**, we would expect a slightly different pattern. Wild birds would die in their breeding and non-breeding areas and along the migration routes of carrier species. Poultry should become infected at the same time and same sites as wild birds. Some wild birds could die at sites where there are no poultry; and where wild birds don't die, poultry shouldn't either. None of these patterns is apparent in the way the virus has spread. There have been wild bird deaths away from poultry at Lake Erhel, Mongolia and in Europe. Infection from poultry or other sources cannot be ruled out in the former, and the latter points to widespread near-simultaneous infection from a contaminated source, possibly agricultural fields or water bodies that have received poultry faeces.

If wild birds were **carrying and shedding the virus for a short time before dying**, the pattern would be different again. As successive groups of migrants became infected and died, we would expect the virus to spread continuously along migration routes. Both wild bird deaths and poultry deaths should follow these routes, without isolated concentrations of dead birds. This pattern is apparent in the European outbreaks, but significantly, there has (as yet) been no reflected outbreak in poultry [apart from a case currently under investigation of possible local poultry contamination in northern Germany], perhaps because of the low titre of virus shed by infected swans.

If infected wild birds **all died rapidly**, we would expect localised concentrations of deaths that soon burn themselves out, with no trails of deaths of either wild or domestic birds along migration routes. This is the pattern that most outbreaks show.

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