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Short Communication

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Avian influenza and UK wild birds: scope of the problem and responses to it

Abstract

This short communication outlines the biology of highly pathogenic avian influenza (HPAI) and the effects it has had, and continues to have, on wild bird populations particularly in the United Kingdom.

Keywords: avian influenza, wild birds, conservation

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Introduction

Since the summer of 2021 a lineage of highly pathogenic avian influenza has repeatedly infected wild birds across Europe, and the UK has experienced sustained waves of detections and mortalities. Government surveillance and conservation organisations report that tens of thousands of wild birds—across waterfowl, seabirds and raptors—have been found dead or tested positive, and some species and colonies have suffered severe, population-level impacts.[1]

Direct mortality and visible population declines

HPAI infection in wild birds often causes acute disease and rapid death, and in some species mortality has been catastrophic. Seabird colonies have been particularly affected: for example, northern gannets and great skuas have shown marked die-offs with local population declines reported at many colonies; national monitoring has recorded reduced colony attendance, lower breeding success and higher adult mortality in 2022–2024 in several seabird species. Conservation bodies describe losses in the tens of thousands of individuals for multiple seabird species in the UK.[2] Beyond immediate mortality, HPAI has important demographic consequences. Mortality of breeding adults reduces current-year reproductive output and can cause staggering population-level effects because many affected species (gannets, skuas, terns, some gulls) have low reproductive rates and delayed maturity. Reports and studies document reduced chick numbers and evidence of reproductive failure in colonies exposed to HPAI, which slows or prevents short-term recovery even if outbreaks abate. In short-lived or highly fecund species recovery may be faster, but for long-lived seabirds even modest increases in adult mortality can cause sustained declines. Not all species are equally affected. Early waves concentrated infections in Anseriformes (ducks, geese, swans), but subsequent waves expanded into Charadriiformes (gulls, terns) and a broad range of seabirds. Raptors and scavengers have also become infected through feeding on infected carcasses. Surveillance data compiled by APHA and research teams show dozens of species testing positive, and large-scale carcass testing (several thousand carcasses in some studies) has revealed at least 80 species with positive detections in recent seasons. This breadth suggests the virus has broadened its ecological host range relative to many previous outbreaks.[3]

Surveillance bias and uncertainty in mortality estimates

Interpreting the scale of impact requires caution: carcass- and testing-based counts are biased by where people look (coasts, reserves), search effort, carcass persistence, and reporting behaviour. Several recent analyses warn that published carcass totals under-estimate true mortality but nonetheless match the pattern of species most affected.[4] Modelling efforts that combine surveillance data with population counts estimate very high excess mortality in some species but also show wide confidence intervals—uncertainty that matters for management. The remarkable spread of this H5 lineage appears driven by a mix of factors: virus traits (increased ability to infect and cause disease in a broader range of bird species), migratory connectivity (long-distance movements of wild waterfowl and seabirds), and ecological interactions (scavenging, colony density). There is evidence of both introduction via migratory waterfowl and efficient local amplification in dense breeding colonies — a combination that produces rapid, high-mortality events in some places. Climate, seasonal migration timing, and human factors (poultry outbreaks creating spillover opportunities) also influence patterns of emergence.[5] Some data indicate that a proportion of exposed birds survive and that antibodies can be detected in juveniles in the post-outbreak period, suggesting some acquired immunity in parts of populations. However, immunity may be partial and transient, and virus evolution means future waves could differ in pathogenicity or host range. The demographic shock to seabird colonies can have cascading ecological effects: altered predator–prey dynamics, changes in colony site fidelity or movement behaviour, and reduced ecosystem services (forage fish regulation, nutrient transport from sea to land) provided by healthy seabird populations.[6]

Conservation and management responses

UK responses have included enhanced surveillance (carcass testing, targeted sampling), advice to the public (report dead birds; avoid handling), strengthened biosecurity for poultry and captive birds, and targeted conservation measures to reduce other stressors on affected populations (e.g., reducing disturbance, predator control where appropriate, and habitat protection to aid recovery). Scientists and conservationists also emphasise the need to reduce other pressures—fisheries interactions, pollution, habitat loss—that could compound disease-driven declines. The balance between intervention and non-intervention in wild colonies remains debated because handling or disturbance can worsen outcomes in some outbreaks.[7] Key research priorities are first obtaining better estimates of true mortality through designed field studies and modelling that correct for detection bias;

secondly understanding immunological responses and duration of protection in different species; third tracking virus evolution and host-adaptation; and finally producing integrated conservation planning that accounts for disease risk when prioritising actions (e.g., which colonies to protect most intensively). Recent papers and government reports explicitly call for more coordinated long-term monitoring to distinguish transient fluctuations from permanent declines.[4,8]

Conclusion — a substantial and ongoing conservation challenge

HPAI since 2021 has shifted from episodic spillover to a recurring, landscape-level threat for wild birds in the UK, with severe immediate mortality in multiple species and likely long-term demographic consequences for slow-breeding seabirds and other vulnerable taxa. While surveillance and research have rapidly improved our understanding, substantial uncertainties remain about true mortality rates, the durability of population recovery, and the virus's future evolutionary trajectory. Conservation actions that reduce other pressures on affected populations, combined with robust monitoring, are the most pragmatic route to limit the long-term biodiversity consequences of this disease.

Acknowledgments

None.

Conflicts of interest

None.

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