

## AVIAN INFLUENZA

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## Overview

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Influenza A viruses belong to the Orthomyxoviridae family and are widespread among wild birds and predominantly among waterfowl. Different subtypes have been described based on their haemagglutinin (15 H subtypes) and neuraminidase antigens (9 N subtypes). The H5N1 subtype was first isolated in Guangdong, China in 1996 causing the death of a moderate number of geese. Since then, the virus has been causing different outbreaks in the poultry industry. In 2002 the virus spread to humans in Hong Kong with a mortality rate of up to 50% of the infected population. Since late 2003, the H5N1 virus has expanded from a geographical and host range point of view. The spread of the virus to poultry and wild birds in Europe and Africa, together with the continuing H5N1 evolution and the increasing number of human infections, has raised concern about a possible influenza pandemic.

In recent years risk assessments have been used in the veterinary field as a method of evaluating risk resulting from a hazard. The risk assessment methodology (based on the OIE Animal Health Code) comprises three stages:

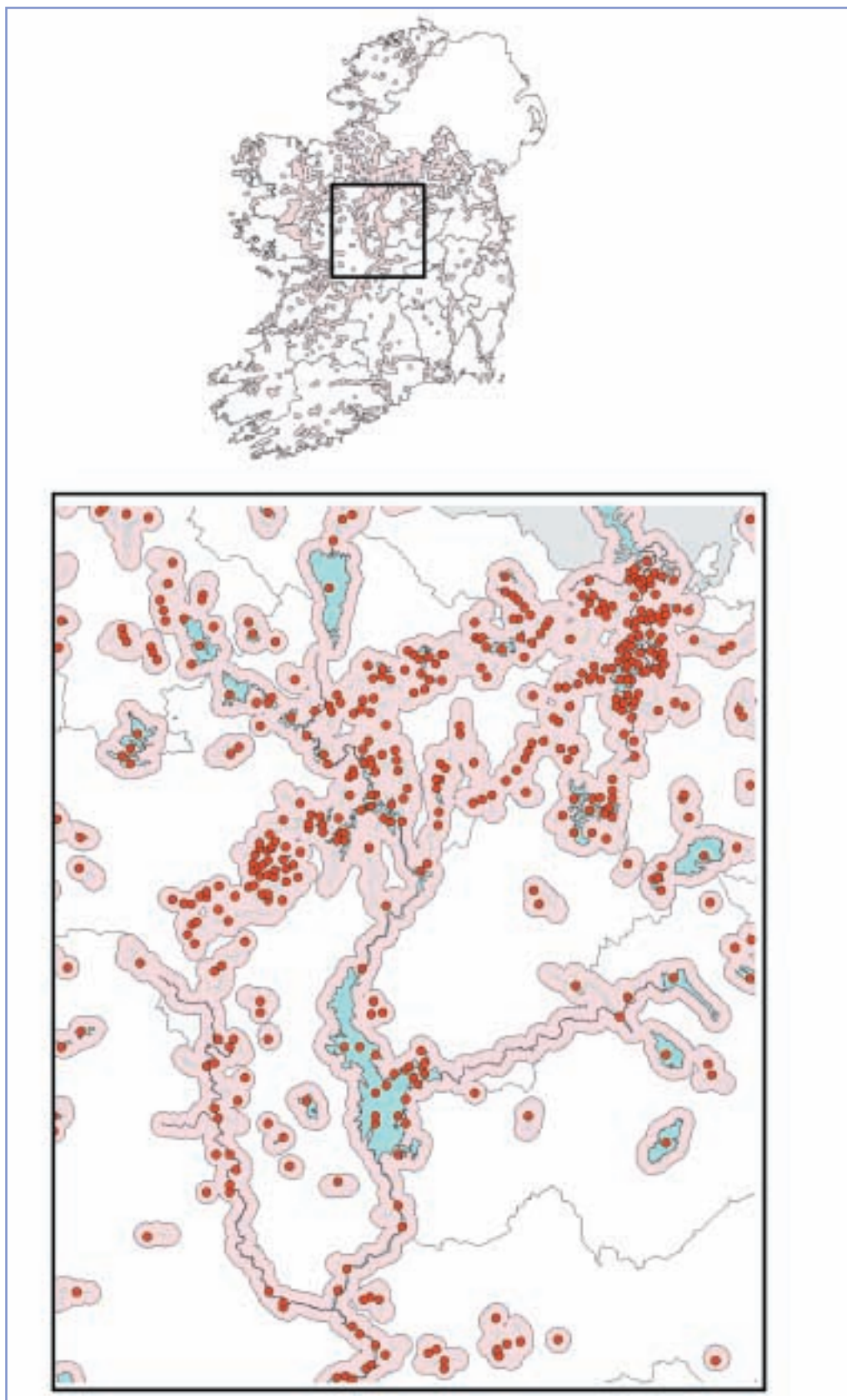
- *Release assessment* (the likelihood of entry, through the activities of wild waterbirds);
- *Exposure assessment* (the likelihood of spread to and within the commercial Irish poultry industry, following introduction); and
- *Consequence assessment*.

This methodology has been applied in order to qualitatively assess the likelihood that H5N1 virus will be introduced by wild waterbirds and will be spread to and within the Irish commercial poultry industry.

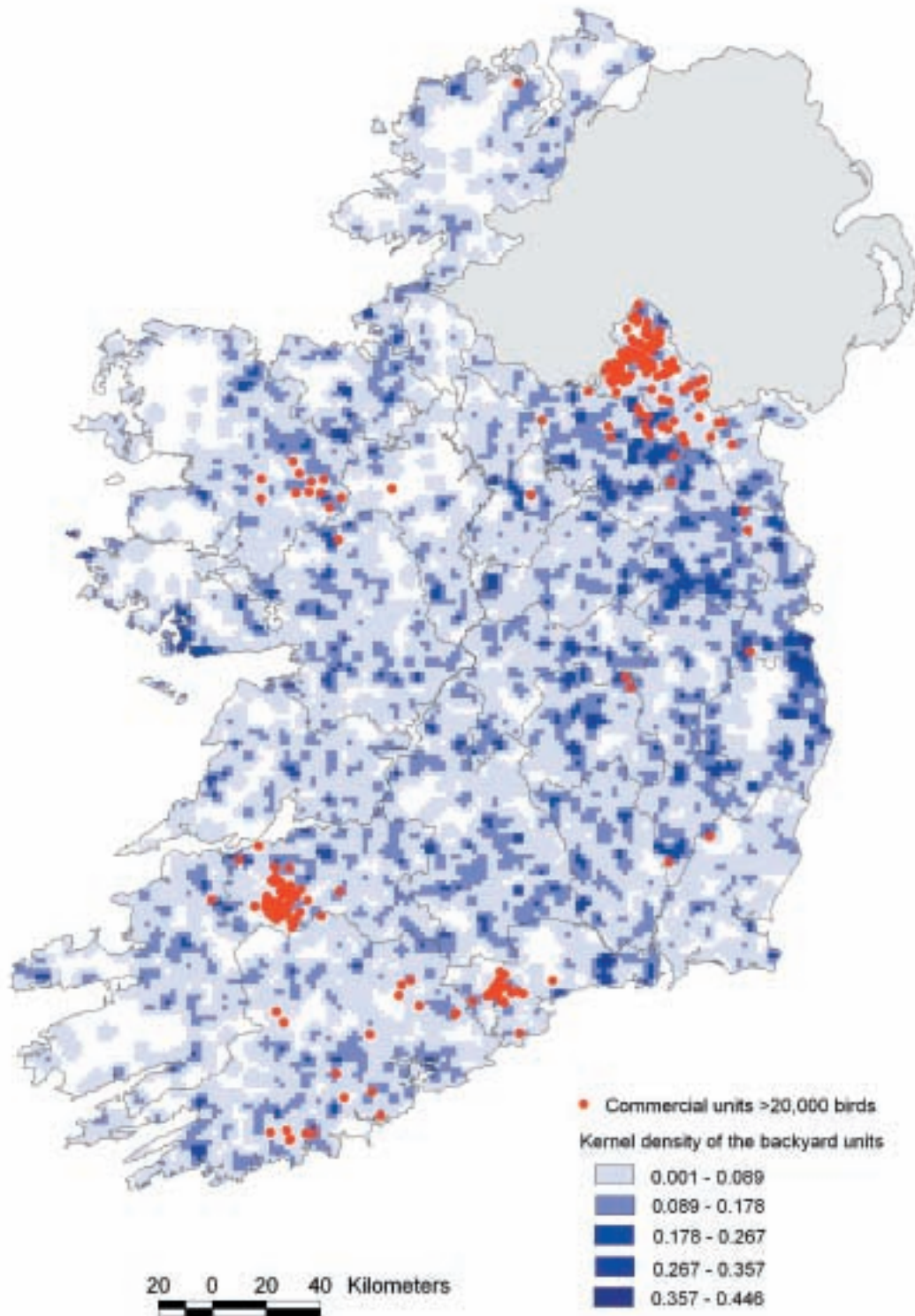
In collaboration with water-bird ecology experts, high risk migratory species wintering or breeding in Ireland have been identified. Migratory patterns and distribution in Ireland and Europe have been described for those species.

As part of the assessment, we are examining different ways in which H5N1 could spread among and between wild birds, commercial and non commercial units in the country. The Irish commercial poultry industry and related industry practices have been described in detail, and industry practices that could increase the risk of spread of the disease are currently being examined. Changes to high risk practices could lower the risk of introduction to and spread within the commercial industry, and may prove critical to industry survival if H5N1 infection were to become endemic in the Irish wild bird population. High-risk areas (based on species, enterprise type, density and proximity to wetlands and waterbirds) are being identified using the GIS software Arcview® 3.2, and a review of the biosecurity measures, surveillance strategies and the adequacy of existing statutory instruments is ongoing.

“Work is underway to assess the likelihood that H5N1 will be introduced by wild waterbirds, and will be spread to and within the Irish commercial poultry industry”

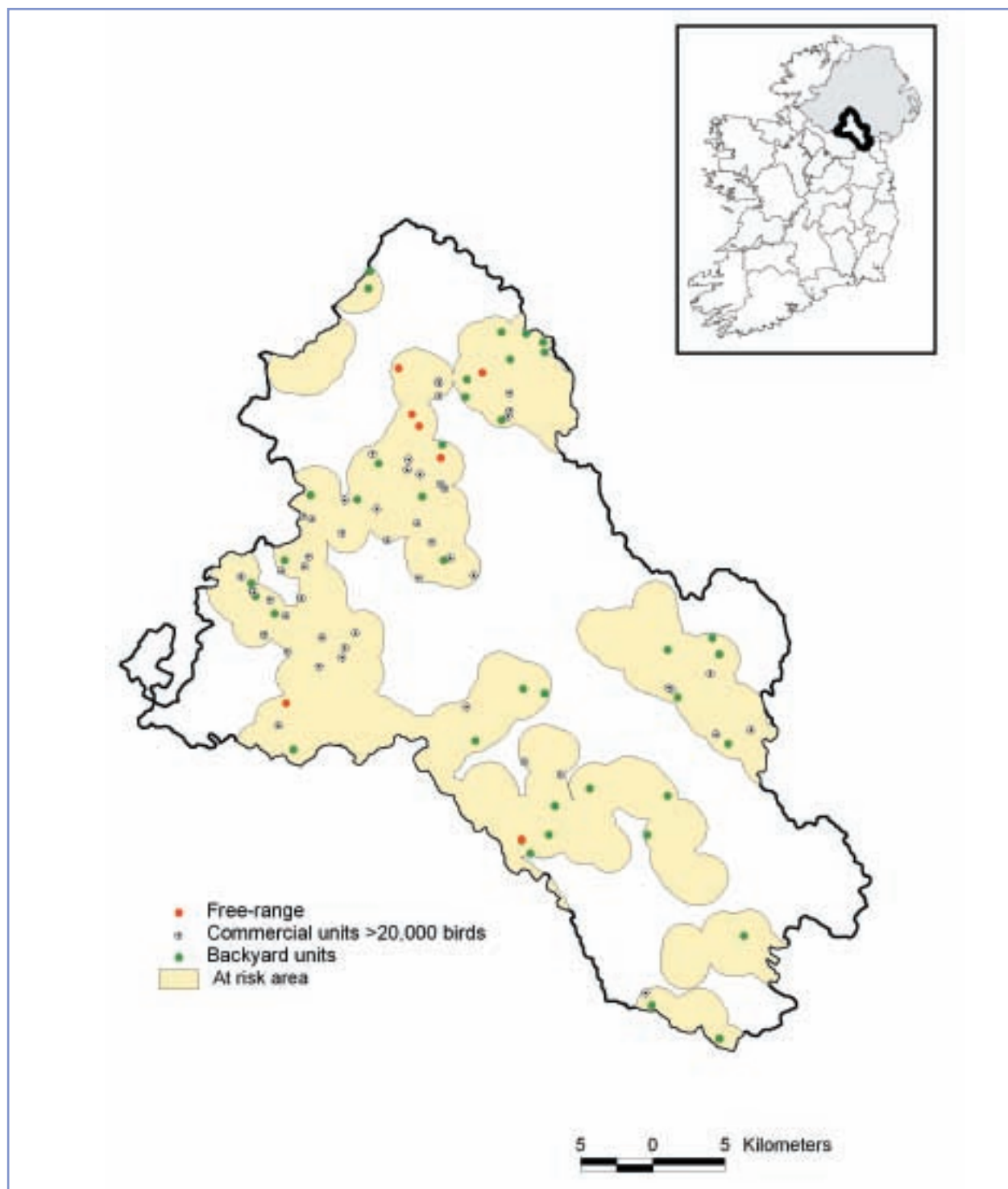


High risk areas of Ireland, based on waterbird distribution. A 1.5 km buffer has been created around waterbodies (lakes in blue, rivers in black) and in which waterbird sampling sites (red dots) occurred



The distribution of commercial poultry units (each red dot represents a unit of greater than 20,000 birds) and backyard poultry (kernel density distribution, in blue)





Map of poultry units (free range, commercial, backyard) in high risk areas of Co. Monaghan

### Key meetings/presentations

Simon More

- DAF meeting (Avian Influenza), Dublin (3 November 2005)