

Risk-based Targeted Surveillance: Identifying Areas and Populations of Importance for Surveillance of High Path Avian Influenza

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The recent emergence of Asian H5N1 and its rapid spread throughout Asia, Europe and Africa has focused attention on the need for enhanced avian influenza surveillance. Waterfowl and shorebirds appear to be the primary natural reservoirs for type-A influenzas and have been implicated as the progenitors of previous human flu pandemics. Avian influenza surveillance programs have been established to detect the H5 and H7 subtypes of AI in domestic poultry and wild waterfowl. However, early detection of avian influenza requires risk-based targeted surveillance of populations at highest risk for emergence of the virus. Using knowledge about the ecology of migratory waterfowl and the distribution of poultry farms, areas of importance for surveillance of wild waterfowl and domestic poultry can be identified.

With limitations, continental movements of waterfowl can be estimated using data from bird band data. Analysis focused on waterfowl functional groups thought to be responsible for large-scale movements of avian influenza. Recoveries of banded birds were used to identify areas within the mainland United States where higher proportions of migrant waterfowl originating from breeding areas in Asia, Alaska, and Canada congregate. In addition, National Agricultural Statistics Service data on the number and size of poultry farms was used in conjunction with the bird banding data to identify areas important for enhanced surveillance in domestic poultry flocks.

National Wildlife Refuges and State Wildlife Areas with higher occurrence of high risk migrant waterfowl were prioritized for avian influenza surveillance. These refuges represented 9% (918) of all National and State Wildlife Refuges and represent 72% of all band recoveries for birds originating from Alaska and Asia recovered on refuges. Ranking of areas with domestic poultry flocks identified 15% of counties where enhanced surveillance may help detect emergence of Avian Influenza.

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