



# Surveillance and Control of Avian Influenza in the New York Live Bird Markets, 2003 - 2008

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## Background

Since the Fall of 1994 an H7 low pathogenic avian influenza (LPAI) virus has been isolated from the New York live bird markets (LBM). In 1998 New York became the first state to promulgate regulations to control/eliminate avian influenza virus from the LBM system. (2)

## History

Prior to adoption of the regulations, birds entered the LBMs from many different farm sources. Often they were passed through several locations being grouped and re-grouped before, ultimately, ending up in an end-stage LBM.

Below is one trace out from 6 positive LBMs, identifying one poultry dealer, Poultry Dealer 1, as the supplier of the birds to their markets.



The regulations mandated several things, including:

- prior to movement birds must be assembled as a closed flock for a minimum of 21 days, and
- after 21 days, the flock must be inspected and found free of clinical signs of illness, and
- after this 21 day period, samples are collected from randomly selected birds in the flock, tested and found negative for evidence of avian influenza prior to movement to the LBMs.

The regulations also mandated general sanitation requirements and record keeping.

If only qualified, test negative birds entered the system this should have been sufficient to control and eliminate avian influenza virus from the LBMs. However studies in 2001 and 2002 found that 60% and 83%, respectively, of the LBMs were positive for LPAI H7 virus. (1, 5)

Beginning January 1, 2003, all LBM owners agreed to voluntarily depopulate all birds and conduct a cleaning and disinfecting procedure quarterly. Before re-opening, the LBM was inspected and sampled. (5)

In February 2002, the regulations were amended to forbid the removal of live birds from a market. (3)

In August 2004, the regulations were again amended to address minimum standards for those licensed to deliver birds directly to the LBMs. (4)

## Materials and Methods

Cloacal and oral pharyngeal samples were collected from birds in the LBMs. At this time, environmental samples were also collected from the LBMs.

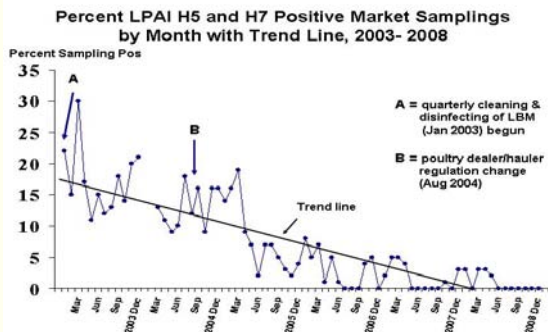
Up to 5 birds, representing a different type and/or source, were randomly selected and swabbed. (5) The five individual swabs were pooled, while maintaining the group or source identity. Oral pharyngeal samples were tested using the RRT-PCR method. The cloacal and environmental samples were tested via virus isolation. Cloacal swabs were collected from water fowl species. Non-water fowl birds had oral pharyngeal swabs collected.

Results of sampling in the LBMs were compared both before and after regulatory changes were implemented.

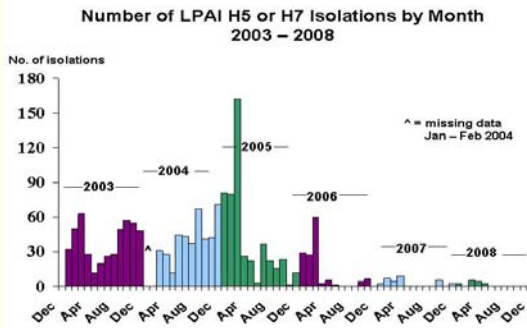
## Results

The total number of sampling visits varied by month throughout the 6 years of this study. In some instances when a LBM was reported positive for evidence of LPAI H5 or H7 virus, it is possible for that market to be cleaned and then re-tested again later that same month. Each sampling visit is considered the unit of measurement and the sampling event is considered either positive or negative. LBMs having even one positive sample were classified as positive.

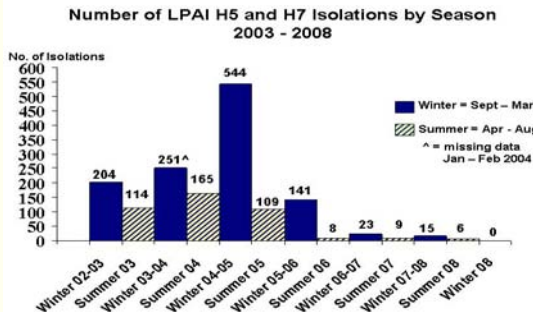
Sampling visits were totaled for each month and the percent number of sampling visits positive for evidence of either H5 or H7 LPAI is presented in the first graph below.



The total number of LPAI H5 or H7 isolates are presented in the graph below. The total number of positive isolations peaks in March 2005 (N = 162).



The total number of LPAI H5 or H7 isolations peaked in the winter of 2004-05 when categorized by season. By comparison the summer months have fewer positive findings than the winter months as illustrated below. Although the number of isolations increases with the onset of winter in 2005, after March 2005, it does not rise to previous levels.



## References

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2. New York State Code, Rules and Regulations, Part 45, 1998.
3. New York State Code, Rules and Regulations, Part 45, 2002.
4. New York State Code, Rules and Regulations, Part 45, 2004.
5. Trock, S.C., Gaeta, M., Gonzales, A., Pederson, J.C., and Senne, D. A. Evaluation of routine depopulation, cleaning and disinfection procedures in the live bird markets, New York. Avian Dis. 52:160-162, 2008.

## Conclusions

New York adopted a two pronged approach to control and elimination of LPAI viruses from the LBM system. This approach integrated voluntary and regulatory efforts.

### Voluntary Component:

Beginning January 1, 2003, all LBMs agreed to remove, via depopulation on site, all live birds and then conduct a thorough cleaning and disinfecting of their facilities every 3 months.

### Regulatory Component:

The original regulations primarily addressed the producer (flock qualifications) and the end-stage LBMs (general sanitation, etc).

The 2002 amendment forbade the movement of live birds from any LBM.

To mitigate the spread of any LPAI which does enter the system, a kill step is necessary. New York placed this step with the poultry dealer/haulers by mandating minimum facility standards. The 2004 regulatory requirements included:

- utilizing a working mechanical crate washer, &
- utilizing an all-season vehicle wash facility, &
- clear delineation between clean and contaminated areas at the poultry dealer/hauler facilities.

In August 2004, < 20 entities stated that they met the new requirements. Regulatory compliance activity included removing the license of poultry dealer/haulers not meeting the standards.

These combined efforts have been successful. The last isolation of H7 LPAI was in April 2006, after a 13 year history of being found in the markets. Though there have been sporadic isolations of H5 LPAI from the LBMs, control procedures have prevented these viruses from persisting in the LBMs or the system.

