

Trigger Events for
Mosquito Adulticide
Applications in
Massachusetts in 2001

**Massachusetts Department
of Public Health**

Decisions Regarding Adulticiding in MA

- **Local government/health dept. makes decision regarding mosquito control, unless Governor declares a state of emergency (on advice of MDPH)**
- **In general, role of MDPH is to provide guidance and data to advise and inform on risk of disease**
- **In the case of an emergency (significant outbreak), MDPH may direct mosquito control, larvacide and adulticide**

WNV Guidance for 2001

- **For 2001, WNV prevention & control guidance developed by process involving MDPH, local health depts., mosquito control districts, academic experts, etc.**
- **MA already had plan for EEE; was expanded/modified**
- **Resulting matrix similar to CDC's guidance for 2001 and to guidance developed by many other states**

Risk Categories for Human Disease

1

2

3

4

5

6

7

No current or prior year activity

No current activity

WMN-infected bird
(impacted area)

WMN in birds/bird-biting mosquitoes

Signif.-risk indicators positive

Locally-acquired human case

Multiple human cases

5: Significant Risk Indicators Positive (high risk of human disease)

- **Definition**
 - identification of continued high or increasing numbers of WNV-infected birds, rising or high WNV minimum infection rates in mosquitoes, and a WNV-positive pool of mammal biting mosquitoes, or laboratory confirmed WNV in a horse
- **Communication (cat. 4 plus)**
 - Multi-media press release

5: High Risk of Human Disease

- **Communication, cont.**
 - intensify public education on personal protection measures
 - special messages for areas with vulnerable populations
 - advisory information provided on spraying
- **Surveillance & Control (cat. 4 plus)**
 - review current situation in area and consider ground-based adulticiding
 - town or city may request to preempt private property 'no spray' requests

5: High Risk of Human Disease

- **Surveillance & Control, cont.**
 - measure treatment effect of pesticide use if mosquito adulticiding is used
- **Assessment & Options (cat. 4 plus)**
 - when a trend of increasing or significant WNV activity is identified, MDPH will confer with local health officials to determine if the risk of human disease warrants a recommendation for adult ground-level mosquito control; factors to consider include the time of year, mosquito population abundance, and proximity of virus activity to at-risk populations

6: Locally-Acquired Human Case (high probability of human outbreak)

- **Communication (cat. 5 plus)**
 - Public Health Alert status
- **Surveillance & Control (cat. 5 plus)**
 - review current situation in area and consider ground-based adulticiding
 - town or city may preempt private property ‘no spray’ requests if approved
 - statewide active horse and human surveillance

6: High Probability of Human Outbreak

- **Surveillance & Control, cont.**
 - enhanced passive surveillance for adverse events related to adulticiding
- **Assessment & Options (cat. 5 plus)**
 - if surveillance indicates a continuing risk of human disease and potential for an outbreak, MDPH recommends ground-based adult mosquito control in a community and contiguous areas
 - areas to be treated are selected based on mosquito surveys that identify human-biting mosquitoes

7: Multiple Human Cases (human outbreak in progress)

- **Communication (cat. 6 plus)**
 - Public Health Alert status (by request, MDPH will designate high-risk areas where private ‘no spray’ requests may be preempted by local officials based on this risk level)
 - recommend restriction of group outdoor activities
- **Surveillance & Control (cat. 6 plus)**
 - continual reassessment of recommendations for ground-based adulticiding

7: Human Outbreak in Progress

- **Surveillance & Control, cont.**
 - consideration of aerial adulticiding based on risk of human disease, if risk of disease transmission is widespread
- **Assessment & Options (cat. 6 plus)**
 - MDPH recommends curtailment of group outdoor activities in areas of intensive virus activity, and use of ground-based adult mosquito control
 - MDPH will confer with local health agencies to discuss the use of intensive mosquito control methods

2001 WNV Guidance

- **Overall, more conservative with respect to adulticiding than recommendations for 2000**
- **Stresses prevention, with source reduction, larvaciding and education/personal protection**
- **Implementation meant to be flexible:**
 - **With respect to time of season (date)**
 - **With respect to community**

2001 WNV Guidance, cont.

- **Allows range of responses to same indicators**
- **Factors to consider include:**
 - **The time of year**
 - **Mosquito population abundance**
 - **Proximity of virus activity to at-risk populations**
 - **Intensity and trend of viral activity**

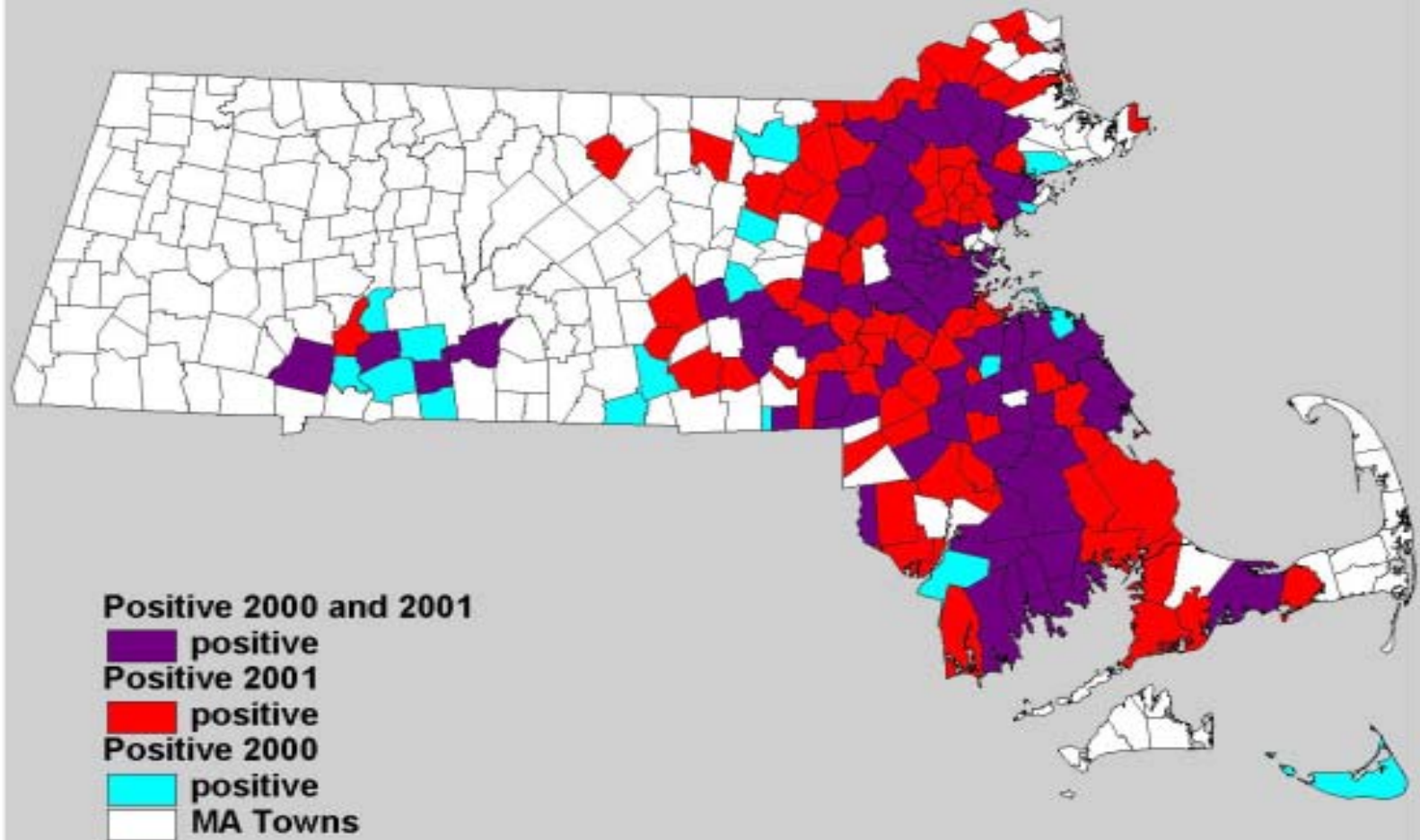
WNV Surveillance Data

- **Avian, mosquito, equine, and human**
- **Provided directly to local health depts.**
- **Posted daily to website – for public and media**
- **Monitored and interpreted by MDPH (incl. dead bird/crow density assessment)**

2001 WNV Experience

- **WNV-positive birds found earlier in season**
- **WNV-positive birds found over wider area**
- **WNV-positive mosquitoes found over wider area (mostly bird-biters)**
- **No indicators for adulticiding triggered in July/August/early September**

WNV-Positive Birds in 2000 and 2001 Massachusetts



2001 Experience, cont.

- **Two adjacent towns chose to spray (with ground-level adulticide) a shared area with intense WNV activity; was a local decision**
- **Sept. 11 and subsequent BT events led to significant diversion of public, media and public health attention from WNV**

2001 Experience, cont.

- **MA had 45 WNV-positive horses in 2001 but earliest confirmed case was in mid-Sept, with press release on Sept. 12**
- **MA had one human case of EEE; confirmed Sept. 17**
- **MA had three human cases of WNV; first case confirmed in early Nov.**

MA 2001 Human WNV Cases

- **3 laboratory-confirmed cases**
 - **Fever, headache, muscle weakness, mental confusion, seizures; meningo-encephalitis or encephalitis**
- **1 fatality**
- **Males, ages 70, 72, and 89**
- **Residents of Woburn, Dartmouth and Acushnet**
- **Onsets between 9/15/01 and 11/05/01**

2001 Experience, cont.

- **Prospectively, the horse and human cases were reported well beyond viable time for adulticiding**
- **Retrospectively, density and other triggers were not met prior to the horse or human reports (to permit pre-emptive spraying)**

Lessons From 2001

- **Need to expand time period of concern well into Fall if weather is mild**
 - **Unclear implication with respect to mosquito control, since generally can't adulticide during these months**
- **Prospective assessment of dead bird/crow density needs a geographic correlate smaller than county but larger than town**