Operational Mosquito Control in Response to West Nile Virus

John Stroh
San Joaquin County
Mosquito & Vector Control District
“If we expect that something bad is going to happen, we behave very differently than if we expect good could happen.”

Steve Carpenter, Ecologist, University of Wisconsin
CALIFORNIA MOSQUITO-BORNE VIRUS SURVEILLANCE & RESPONSE PLAN

Arnold Schwarzenegger, Governor

June 2005

California Department of Health Services
Mosquito & Vector Control Association of California
University of California

For further information contact:
Vector-Borne Disease Section
California Department of Health Services
(916) 553-6730
http://www.cdss.ca.gov

<table>
<thead>
<tr>
<th>WNV Surveillance Factor</th>
<th>Assessment Value</th>
<th>Benchmark</th>
<th>Assigned Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Environmental Conditions</td>
<td>1</td>
<td>Avg daily temperature during preceding month &gt; 76°F</td>
<td></td>
</tr>
<tr>
<td>2. Adult Culex larvae and Cx.</td>
<td>1</td>
<td>Vector abundance overall average &gt; 40/m2</td>
<td></td>
</tr>
<tr>
<td>3. Virus infection rate in Culex</td>
<td>1</td>
<td>1000 = 0</td>
<td></td>
</tr>
<tr>
<td>4. Dead bird infection</td>
<td>1</td>
<td>No seroconversions</td>
<td></td>
</tr>
<tr>
<td>5. Equine cases</td>
<td>1</td>
<td>One equine case in specific region</td>
<td></td>
</tr>
<tr>
<td>6. Human cases</td>
<td>1</td>
<td>No human cases</td>
<td></td>
</tr>
<tr>
<td>7. Proximity to urban or suburban regions</td>
<td>1</td>
<td>Virus detected in urban area</td>
<td></td>
</tr>
<tr>
<td>DATE</td>
<td>AVG. RATING</td>
<td>RESPONSE</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td>---------------------</td>
<td></td>
</tr>
<tr>
<td>July 22</td>
<td>2.15</td>
<td>Normal Season</td>
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</tr>
<tr>
<td>July 29</td>
<td>3.375</td>
<td>Emergency Planning</td>
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<tr>
<td>August 1</td>
<td>3.625</td>
<td>Emergency Planning</td>
<td></td>
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<tr>
<td>August 8</td>
<td>4.0*</td>
<td>Emergency Planning</td>
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</tr>
<tr>
<td>August 15</td>
<td>4.375</td>
<td>Epidemic Conditions</td>
<td></td>
</tr>
<tr>
<td>First WNV+ Dead Bird</td>
<td>First WNV+ Mosquito Pool</td>
<td>First WNV+ Human</td>
<td>First WNV+ Equine</td>
</tr>
<tr>
<td>----------------------</td>
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<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>6/7/05</td>
<td>7/5/05</td>
<td>7/15/05</td>
<td>7/23/05</td>
</tr>
<tr>
<td>Date of collection</td>
<td>Date of collection</td>
<td>Date of onset</td>
<td>Date of onset</td>
</tr>
<tr>
<td>Week 23</td>
<td>Week 27</td>
<td>Week 28</td>
<td>Week 29</td>
</tr>
</tbody>
</table>
July 22 - August 6, 2005

• Increased surveillance for WNV in mosquito pools and follow-up on equine, human, and dead bird reports
• Increased emphasis on inspection and larviciding at known and suspect mosquito breeding sites
• Increased adulticiding in areas with vector species and/or West Nile virus
• Increased education and outreach per recommendations of SJC WNV Task Force
August 7-15, 2005

• Analysis of surveillance data and WNV activity in SJC
• Analysis of WNV activity and control operations in surrounding counties and districts
• Developed budget to expand surveillance, control, and education/outreach for consideration by BOT
• Increased communications with SJC WNV Task Force and SJCMVCD staff
August 16, 2005
Board of Trustees Meeting

• Status report re: WNV activity and mosquito control operations in SJC and surround counties and districts
• Proposed budget to expand surveillance, control, and education/outreach
• Board action to allocate additional $2.5M per staff recommendations
Increased adulticiding in response to increased WNV activity

1. Selection of large-scale aerial spray company to assist current aerial contractor
2. Public notification and updates
3. Expanded adult mosquito surveillance
Information on Increased Mosquito Spraying

• Direct mailing to ≈245,000 parcels; included information on telephone numbers and website address
  – SJC-OES - (209) 469-8200 or www.sjgov.org/oes
  – SJCMVCD – (209) 982-4675

• Full page advertisements/notices in local newspapers (total circulation of 136,200), weeks of 8/22, 8/29, and 9/5:
  – Lodi News Sentinel
  – The Record (Stockton)
  – Manteca Bulletin
  – Tracy Press
¡Evite Picaduras de Zancudos!

- Aplíquese repelente para zancudos que contenga DEET (N, N-diethyl-meta-toluamide) a partes de la piel que estén expuestas, cuando ande afuera.

- Cuando sea posible use camisas o blusas de manga larga, pantalones largos y calcetines cuando ande afuera.

- Las horas cuando esta oscureciendo, son las horas maximas cuando pican los zancudos. Considere evitar actividades de afuera durante estas horas o tome precauciones usando repelente para zancudos y ropa que le proteja durante las horas de oscuridad o horas del amanecer.

- Limite alrededor de su casa la cantidad de lugares en donde los zancudos se reproducen, deshágase de los objetos que acumulan agua, en ellos los zancudos podrían reproducirse.

- Reporte cualquier plaga o infestación de zancudos al Distrito de Control de Zancudos.

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**El Condado de San Joaquin Fuerza Operativa del Virus del Nilo**

- **Linea de Información al público:** (209) 469-8200
- **San Joaquin County Mosquito and Vector Control District:** (209) 362-4675 or 1-800-300-4675
- **San Joaquin County Public Health Services:** (209) 468-3822
- **San Joaquin County Environmental Health Dept.:** (209) 468-3420
- **San Joaquin County Agricultural Commissioner’s Office:** (209) 468-3300
- **San Joaquin County Office of Emergency Services:** (209) 468-3962

**Web Sites:**
- www.co.san-joaquin.ca.us/oes
- www.westnile.ca.gov
- www.cdc.gov
Selection of an additional aerial spray contractor

- Evaluation of recent activities in Sacramento-Yolo MVCD
- Evaluation of available contractors (Dynamic Aviation and VDCI)
- Evaluation of the compatibility with existing aerial spray contractor
Selection of material

- Safety, cost, label requirements, effectiveness (resistance), and compatibility with operations
- Public relations/media and use by neighboring districts
Establish Spray Areas

- Identification of large (≥5,000 acres) areas with vector mosquito populations and/or WNV at or above action thresholds
- Maintain existing mosquito control operations in 19 control zones (1,445 sq. mi.)
  - ≈5,000 routine sources inspected/treated by ground crews
  - Routine larviciding by air of rice fields and large agriculture and industrial sources
  - Routine ULV adulticiding by ground crews of small (≤5,000 acres) areas with vector species and WNV at or above treatment thresholds
INITIAL SPRAY PROJECT

1) 119,979 acres  618.8 gals
2) 26,445 acres  134.6 gals
3) 5,760 acres  29.7 gals
4) 7,680 acres  39.6 gals
5) 12,847 acres  66.2 gals
6) 12,385 acres  63.9 gals
7) 9,120 acres  47 gals
8) 25,824 acres  133.2 gals

220,040 acres  1,133 gallons

X 3 = 660,120 acres  3,399 gallons
Mosquito Control Spray Operations
Larviciding

July
August
Sept
October

Larv. Acres '04
Larv. Acres '05
Mosquito Control Spray Operations
Adulticiding

Adult. Acres '04
Adult. Acres '05

July  August  Sept  October
What Worked

• California Mosquito-Borne Virus Surveillance and Response Plan
• San Joaquin County West Nile Virus Task Force
• Expanded education and outreach
• Expanded surveillance and testing
• Emphasis on larviciding and mosquito source elimination
• 2005-06 State budget w/WNV augmentation
What Didn’t Work

• VDCI could not provide for early A.M. spraying when P.M. spraying was cancelled
• Media overlap with Sacramento, Stanislaus, and Bay-area counties created confusion for local (SJC) residents
• Changing our dead bird program mid-season created confusion and poor public relations
• Sentinel chickens did not serve as an early indicator
• Even with year-round education and expanded press since 2002 there was public perception that District was initiating control in 2005 for WNV
• Low potential for mutual aid agreements (either providing or receiving assistance)
“Crime is an epidemic. Poverty is an epidemic. Congressional lobbying for special interest groups is an epidemic. West Nile virus isn’t. It’s a media-hyped problem that Stocktonians accept as truth.”

Rene Reyes, The Record, 9-9-05