

May 1<sup>st</sup>, 2007  
Volume 1, Issue 1

# Vector Borne Disease Bulletin

**In This Issue:**

**Note from the editor: 1**

**Arboviruses: 1**

**Hantavirus: 2**

**Plague: 3**

**Tick-borne diseases: 4**

**Murine typhus: 6**

**Calsurv: 6**



*A Note from the Editor:*

Welcome to the first issue of the newly revised Vector-borne Disease Bulletin! The intent of this bulletin is to keep you better informed regarding the vector-borne disease investigations and surveillance conducted by the California Department of Health Services and cooperating state and local agencies in California. This first publication of the year includes a brief summary of surveillance results from 2006\* and current quarterly information. Look for the next bulletin at the end of June. In the meantime, please email me with any suggestions you might have for making this bulletin more useful for your work and research. Thanks to everyone who contributed to this bulletin.

Denise Bonilla  
[dbonilla@dhs.ca.gov](mailto:dbonilla@dhs.ca.gov)

For updated and historical WNV data, visit the

California West Nile Virus  
Website:  
[www.westnile.ca.gov](http://www.westnile.ca.gov)

## Arbovirus Surveillance

### 2006 Summary

In 2006, 54 counties in California reported West Nile virus (WNV) activity. A total of 278 human cases\* were reported to the California Department of Health Services (CDHS) from 36 counties. Of the 278 cases, 190 (68%) were classified as West Nile fever, 83 (30%) were identified as neuroinvasive disease cases (i.e. encephalitis, meningitis, or acute flaccid paralysis), and five (2%) were of unknown clinical presentation. There were seven reported WNV-associated fatalities. Non-human WNV activity reported included the following: 58 horse WNV cases were reported from 23 counties—24 died or were euthanized; 832 WNV positive mosquito pools were detected from 33 counties; 640 WNV positive sentinel chickens were reported from 29 counties; 1,446 positive dead birds were reported from 53 counties; and 32 WNV positive tree squirrels were reported from nine counties.



Western equine encephalomyelitis virus was detected in 18 mosquito pools from Kern County and 13 WEE seroconversions were detected in sentinel chickens from Kern (11) and Riverside (2). St. Louis encephalitis virus was not detected in 2006.

**2007 WNV Activity**

As of April 27, 2007, WNV activity has been detected in horses, dead birds, mosquito pools, and sentinel chickens. No human cases have been reported this year.



Be a West Nile Virus  
Watcher!

Report Dead Birds:  
(877) WNV-BIRD

**Summary of WNV Activity by Element and County, 2007**

County	Humans	Horses	Dead Birds	Mosquito Pools	Sentinel Chickens	Tree Squirrels
Imperial					1	
Los Angeles			2	1	1	
Orange			4			
Riverside				1		
San Diego			5			
Santa Clara			6			
Stanislaus			1			
Sonoma		1				
<b>Totals</b>	<b>0</b>	<b>1</b>	<b>18</b>	<b>2</b>	<b>2</b>	<b>0</b>

**Hantavirus Surveillance**

**2006 Summary:**

Four cases of hantavirus pulmonary syndrome\* (HPS) were diagnosed in California residents in 2006. Three of these were fatalities.

**Surveillance for hantavirus in California rodents**

In 2006, 2498 rodents were collected and serologically tested for SNV antibody, representing at least 17 species from 8 genera. At least one seroreactive rodent was detected in 11 of 14 California counties in which surveillance was conducted in 2006. Of 2274 *Peromyscus* spp. collected, 224 (9.9 %) had serologic evidence of infection with SNV. Seroprevalence was highest in *Peromyscus maniculatus* at 15.7 percent.

**2007 Activity:**

No cases of hantavirus pulmonary syndrome have been detected in California residents in 2007 to date.

Two *Peromyscus maniculatus* and one *Reithrodontomys megalotis* from Riverside county have tested positive for SNV antibodies from January through March, 2007.

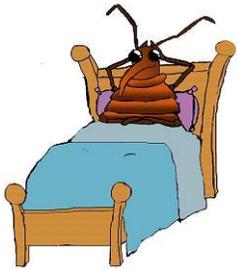


*Peromyscus maniculatus graphic courtesy of the Centers for Disease Control and Prevention:*

[www.cdc.gov](http://www.cdc.gov)

**Rodents tested for antibody to Sin Nombre Virus, January-March, 2007.**

County	No. rodents tested	No. rodents positive	Species
Alameda	23		<i>Peromyscus maniculatus</i>
Los Angeles	2		<i>Peromyscus maniculatus</i>
Riverside	1		<i>Microtus californicus</i>
	30		<i>Peromyscus eremicus</i>
	46	2	<i>Peromyscus maniculatus</i>
	9	1	<i>Reithrodontomys megalotis</i>
San Bernardino	8		<i>Peromyscus maniculatus</i>
San Diego	5		<i>Peromyscus boylii</i>
	17		<i>Peromyscus californicus</i>
	1		<i>Peromyscus crinitus</i>
	17		<i>Peromyscus eremicus</i>
	16		<i>Peromyscus maniculatus</i>
	5		<i>Peromyscus trueii</i>
	3		<i>Reithrodontomys megalotis</i>
Total Jan.-Mar.	183	3	



Bed bug problems?

Check out the Guidelines for Prevention and Control of Bed Bugs in California at:

[www.dhs.ca.gov/ps/dccdc/disb/pdf/California%20Bed%20Bug%20Guidelines%20FINAL%20202-1-07.pdf](http://www.dhs.ca.gov/ps/dccdc/disb/pdf/California%20Bed%20Bug%20Guidelines%20FINAL%20202-1-07.pdf)

## Plague Surveillance

### 2006 Summary:

Two human cases of plague\* were reported in California in 2006.

Blood samples were collected from 832 wild carnivores and 187 feral pigs from 34 California counties. Antibodies to *Yersinia pestis* were detected in 45 (8.6%) of 523 coyotes. Antibodies to *Y. pestis* were also detected in 5 of 28 black bears, 1 of 99 raccoons, 1 of 115 skunks, and 6 of 187 feral pigs.

Blood samples were tested from 646 wild rodents collected in 20 California counties. Antibodies to *Y. pestis* were detected in 13 of 286 California ground squirrels, 1 of 2 pine squirrels, 1 of 2 long-eared chipmunks, 1 of 36 lodgepole chipmunks, and 5 of 86 deer mice. Seropositive rodents were identified from 5 counties.

Twenty-seven wild rodents, 12 rabbits (cottontail, brush, and jackrabbits), and 17 flea pools from rodents collected from 13 counties were submitted to the Microbial Disease Laboratory of CDHS for bacteriologic testing. *Yersinia pestis* was detected in two cottontail rabbits, three California ground squirrels, two Antelope ground squirrel flea pools, and in four ground squirrel flea pools.

**2007 Activity:**

No cases of plague have been detected in California residents in 2007 to date.

During January and February, surveillance of wild mammals yielded two coyotes with detectable antibodies to *Y. pestis* from Kern County.

**Mammals tested for plague, January-February, 2007.**

<u>County</u>	<u>Location</u>	<u>Date</u>	<u>Species</u>	<u>No. tested</u>	<u>No. positive</u>	<u>Results</u>
Kern	Bakersfield, 5E	18-Jan	Coyote	2		
	Bakersfield, 5E	19-Jan	Coyote	2	1	1:512
	Blackswell's Corner, 3S	15-Feb	Coyote	1		
	Blackwell's Corner, 10W	10-Jan	Coyote	1		
	Blackwell's Corner, 14W	10-Jan	Coyote	1		
	Blackwell's Corner, 9NW	16-Feb	Feral pig	1		
	Dustin Acres, 4E	4-Jan	Raccoon	4		
	Gorman, 10S	16-Jan	Coyote	2		
	Gorman, 8E	16-Jan	Coyote	1		
	Grapevine	4-Jan	Coyote	2		
	Grapevine, 2E	4-Jan	Coyote	2		
	Grapevine, 5E	4-Jan	Coyote	1		
	Kernville, 5SE	19-Jan	Coyote	1	1	1:256
	Maricopa, 3E	2-Feb	Coyote	1		
	Old River, 5SW	25-Jan	Raccoon	1		
	Old River, 5SW	12-Feb	Raccoon	2		
	Old River, 5SW	13-Feb	Raccoon	1		
	Taft, 1S	6-Feb	Coyote	1		
	Taft, 4E	6-Feb	Coyote	1		
	San Luis Obispo	Atascadero	12-Jan	Raccoon	1	
Los Osos		17-Jan	Raccoon	1		
<b>Total</b>				<b>30</b>	<b>2</b>	



An adult *Ixodes pacificus* (Western black legged tick) crawls across a flag.

**Tick-borne disease Surveillance**

**2006 Summary:**

**Lyme disease**

A total of 81 cases of Lyme disease\* were reported to the CDHS in 2006. Case-patients were residents of 22 counties.



### Tick-borne relapsing fever

Five cases of tick-borne relapsing fever\* (TBRF) were reported to the CDHS in 2006 from four counties.

### Tularemia

Five cases of tularemia\* were reported to CDHS in 2006, two of which were possibly acquired via tick bite.

### Anaplasmosis

Two cases of human granulocytic anaplasmosis\* (HGA) were reported to CDHS in 2006.

### 2007 Activity:

No tick-borne disease in humans has been reported this year to date.

Between January and March 2007, 2,314 adult *Ixodes pacificus* were collected in 10 California counties (Alameda, Butte, Calaveras, Contra Costa, Los Angeles, Mariposa, Santa Clara, Shasta, Sonoma, and Tuolumne) by CDHS-VBDS and local vector control and public health departments. In addition, 411 male and 349 female *Dermacentor occidentalis* were collected in 6 counties (Alameda, Calaveras, Contra Costa, Mariposa, Santa Clara, and Sonoma). *Dermacentor variabilis* (6 male and 3 female) ticks were collected in Contra Costa and Santa Clara Counties. Nymphal *I. pacificus* were detected in late January in Alameda County. *Ixodes pacificus* will be tested for *Borrelia burgdorferi* by the United States Army Center for Health Promotion and Preventative Medicine – West (PCR) and by CDHS-VBDS (DFA).



A female *Dermacentor occidentalis* is collected during tick sampling to detect tularemia

### ***Ixodes pacificus* collected, California, January - March, 2007**

County	Location	Adults			Nymphs
		Male	Female	Unknown	
Alameda	Tilden RP	221	201	0	1
	Pleasanton Ridge RP	2	0	0	0
Butte	Loafer Creek SRA	48	42	0	0
Calaveras	Natural Bridge	13	6	0	0
Contra Costa	Tilden RP	219	186	0	0
Los Angeles	Griffith Park	99	84	0	0
Mariposa	Indian Flat CG	2	0	0	0
	McCabe CG	6	13	0	0
	Midpines Park	0	3	0	0
Santa Clara	Henry Coe SP	177	222	0	1
Shasta	Hirz Bay CG	0	0	190	0
	McCloud Bridge CG	0	0	80	0
	Nelson Point CG	0	0	44	0
	Pine Point CG	0	0	55	0
	Pollard Gulch RA	0	0	90	0
Sonoma	Diamond A	96	111	0	0
	Sebastopol	34	37	0	1
Tuolumne	Columbia SP	3	1	0	0
<b>Total</b>		<b>920</b>	<b>906</b>	<b>459</b>	<b>3</b>

CG-Campground; RA -Recreation Area; RP - Regional Park; SP - State Park; SRA -State Recreation Area



An *Ixodes pacificus* nymph by a fingernail



# Murine typhus

**Emerging Vector-Borne Disease in the Spotlight**



Headquarters:  
1616 Capitol Avenue, MS-7307  
P.O. Box 997413  
Sacramento, CA 95899-7413  
916-552-9730

Elk Grove:  
8633 Bond Road  
Elk Grove, CA 95624  
916-686-8414

Ontario:  
2151 Convention Center Way  
Suite 218B  
Ontario, CA 91764-5429  
909-937-3440

Redding:  
2135 Civic Center Drive  
Room 13  
Redding, CA 96001  
530-225-2071

Richmond:  
850 Marina Bay Parkway  
Richmond, CA 94804  
510-412-6251

Santa Rosa:  
50 D Street  
Suite 200  
Santa Rosa, CA 95404  
707-576-2733

San Luis Obispo:  
342 Tyrus Court  
Nipomo, CA 9344  
805-929-5377

**We're on the Web  
at:**

[www.dhs.ca.gov](http://www.dhs.ca.gov)

In June of 2006, Long Beach Department of Health and Human Services received notification that a person living in the city had become ill with murine typhus. This case drew particular attention from Long Beach DHHS, California DHS, and the CDC because it was the first case of murine typhus reported in the city. By the end of summer, ten human cases of murine typhus were reported in southern Los Angeles County and Orange County. Surveillance conducted around case patient homes yielded blood, tissue, and flea (849) specimens from opossums (11) and roof rats (20) that were submitted for PCR detection of *Rickettsia typhi* and *Rickettsia felis*. As of February 2007, four opossum blood specimens were negative, twelve roof rats were negative, and eight of thirty-five *Ctenocephalides felis* fleas collected from three opossums were found positive for a *R. felis*-like organism by nested PCR assays. The remaining opossum, roof rat, and flea specimens will be tested in 2007.



CalSurv is managed jointly by the California Mosquito and Vector Control Association, representing more than 50 local mosquito and vector control agencies in California; the California Department of Health Services; and the Center for Vectorborne Diseases of the University of California at Davis.

California vector-borne disease surveillance, prevention, and control information is available at CalSurv: [www.calsurv.org](http://www.calsurv.org)

**If you have questions about the information contained in this report, please contact your DHS VBDS Regional Biologist, or VBDS Headquarters at 916-552-9730.**

\* human data from 2006 is provisional