

# Zoonotic Disease Newsletter

Washington State Department of Health's bulletin on zoonoses and vector-borne diseases

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## West Nile virus found in Yakima County area horses

By Ron Wohrle, Environmental Health Veterinarian, WA DOH Zoonotic Disease Program

West Nile virus, a potentially fatal disease in horses, has been confirmed in four locations south of Yakima.

A five-year-old unvaccinated gelding from White Swan was euthanized on August 15. Two other sick horses were identified and now appear to be recovering, neither was vaccinated. The fourth horse was not up-to-date on its vaccination, but appears to be recovering. Horses ill with West Nile usually have mild to severe central nervous system symptoms.

None of the horses had been out of the area recently. These are the first confirmed cases this year of West Nile virus in Washington.

"Horse owners are underestimating the risk that West Nile virus presents to their horses," said Dr. Leonard Eldridge, state veterinarian, in a Department of Agriculture new release. "The best ways to protect horses are vaccination and limiting exposure to mosquitoes."



About one-third of the horses that develop West Nile virus illness do not survive. The West Nile vaccines available for horses are extremely effective.

## West Nile emergency prompts aerial spraying in Oregon

By Ben Hamilton, Health Services Consultant, WA DOH Zoonotic Disease Program

A health emergency warning was issued for West Nile virus in early August for Union County. The warning was due to an increase of West Nile virus detections in mosquitoes, birds, and a horse.

Local radio stations and notices at the county fair helped spread the word about the health warning to residents.

Due to the virus continuing to be found at high levels in mosquito pools at certain sites, the Union County Vector Control District decided to aerial adulticide portions of Union County in mid-August to reduce the number of disease carrying mosquitoes.

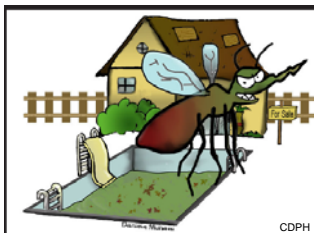
The aerial application used Trumpet EC (active ingredient is Naled) at a rate of three fourths of an ounce per acre. Trumpet EC is an organophosphate and is commonly applied by air for community mosquito control throughout the country.

Kelly Beehler, manager of the Union County Vector Control District, said that 95% of their mosquito control effort targets mosquito larvae. When needed, the District also uses ground and aerial adulticides. This year, the aerial applications targeted areas within city limits, which have generated more public interest than in the past.

To help aid in a prompt response and utilize the best available technology, the District contracted with a national response company to conduct the aerial applications. Beehler reported that the treated areas had over a 90% reduction in mosquito populations based on pre and post adult mosquito trapping. Beehler is hopeful the adulticiding has diminished enough of the *Culex* mosquito populations to lessen the West Nile virus risk in Union County.

## Over \$10 million dedicated to fight West Nile virus in CA

By Ben Hamilton, Health Services Consultant, WA DOH Zoonotic Disease Program



Local mosquito control agencies in California are targeting neglected swimming pools. The depressed housing markets and foreclosures have led to more "green" pools.

### California's West Nile Virus Emergency and Response

Press Releases from the Governor's Office

8/2/07 – [Governor declares state of emergency](#)

8/8/07 – [Additional areas receive emergency relief](#)

8/9/07 – [Emergency funding released to fight West Nile](#)

8/10/07 – [Governor announces additional emergency funding](#)

8/13/07 – [Governor enhances local efforts to fight West Nile](#)

8/20/07 – [Additional resources deployed to fight West Nile in wetland areas](#)

On August 2, California Governor Arnold Schwarzenegger declared a state of emergency for three counties that had, up until that time, the four reported deaths in the state.

"My proclamation makes financial assistance available to the local vector control districts and directs state agencies to take proactive measures to protect Californians from further spread of this deadly virus. I will continue to ensure our local agencies have whatever resources they need to fight the spread of the disease," Schwarzenegger said in a prepared press statement.

Reasons for the emergency proclamation included: a three-fold increase in the number of human infections, upturn in foreclosures increasing vacant homes with "green" swimming pools, Mosquito Vector Control Association of California's request for increased funding for surveillance and control, and control actions that may need to cross jurisdictional boundaries and include ground and aerial application of adulticides.

The initial emergency proclamation allocated up to \$1.5 million dollars to help fight West Nile virus. The three counties named in the proclamation received \$400,000 for emergency adulticiding.

The remaining \$600,000 for mosquito control and \$350,000 for West Nile surveillance was allocated through an application process managed by the California Department of Public Health (CDPH). Agencies with a high risk of West Nile virus transmission within their jurisdiction and limited local resources were encouraged to apply for the emergency funds. In less than two days, applicants were required to fill out forms explaining why their current resources were insufficient, how they'd enhance control or surveillance, and why additional funds were needed. They also were required to complete a West Nile virus risk assessment, which provides a semi-quantitative measure of transmission risk based on mosquito vector abundance, infection rate, and other indications of localized activity.

The last \$150,000 went towards a plan to develop mosquito surveillance and control activities on state-owned properties.

The \$1.5 million wasn't enough, according to California State Senator Dean Florez, who wanted \$48 million dedicated to the issue.

When asked why the \$1.5 million was believed to be enough when Senator Florez was calling for more, Schwarzenegger stood by the initial amount pledged. "It's very important that we go and help, whatever help is needed. If the counties need more, then we will be giving more money. It doesn't make sense to just pick an arbitrary number. The important thing is that we go all out and work together – the counties, the state – in order to get the job done and get rid of the virus," said Schwarzenegger.

Sticking to his word of providing more help if it's needed, the Governor released more funds the following week, and on August 13, signed an executive order which supplemented the original emergency proclamation with up to \$10 million in additional relief for local control agencies. Local agencies were again encouraged to apply for the increased emergency funds through the CDPH (this time without an application deadline). As of August 13, the CDPH has distributed over \$400,000 for West Nile virus surveillance and nearly \$1.5 million for mosquito control to over 30 local agencies in California. On August 20, the Governor allocated up to \$500,000 for the Department of Fish and Game for improved management in state wetland areas affected by West Nile.

After the 2004 outbreak of West Nile virus, the CDPH introduced a proposal to the Governor to earmark funds to expand and enhance local mosquito surveillance and control (prior to an outbreak occurring). The proposal became policy. Local agencies submitted applications to CDPH and they awarded funds. In the 2005-06 budget, \$12 million dollars was available to local agencies for West Nile virus control and monitoring. For the 2006-07 budget, the amount available fell to \$3 million.

## Reptiles and amphibians: Handle with care

Washington State Department of Health, News Release, August 22, 2007



Children should be supervised when they are allowed to handle reptiles or amphibians and instructed to wash their hands after touching them.



Animals like turtles, lizards, snakes, frogs, toads, salamanders and newts carry a type of bacteria called *Salmonella* that can make people sick.

The February 2007 death of a three-week old Florida infant after indirect contact with a pet turtle serves as a tragic reminder of the possible health risks associated with these types of animals.

Reptiles and amphibians carry *Salmonella* in their intestines, which pass with their stool. While the bacteria do not seem to cause any illness for the animal, human infections can result in diarrhea, stomach pain and fever — which can lead to life-threatening complications. Some people are more likely than others to get sick from *Salmonella* exposure. The highest risk is for infants and children younger than five and those with weakened immune systems including pregnant women, organ transplant patients, the elderly, people with untreated HIV/AIDS and people receiving treatment for cancer.

The Centers for Disease Control and Prevention (CDC) estimate that 74,000 people get *Salmonella* infections from reptiles and amphibians each year in the United States. Forty-five cases of illness that may be associated with exposure to these kinds of animals have been reported in Washington so far this year.

Read the complete news release at [www.doh.wa.gov/Publicat/2007\\_news/07-142.htm](http://www.doh.wa.gov/Publicat/2007_news/07-142.htm).

## Gene mutation turned WNV into killer disease for crows

UC Davis, What's New, August 13, 2007

A gene mutation that appears to be responsible for changing relatively mild forms of the West Nile virus into a highly virulent and deadly disease in American crows has been identified by a team of scientists led by a researcher at the University of California, Davis. The results of the study will be reported in the Aug. 12 online issue of the journal *Nature Genetics*.

"The findings from this study highlight the potential for viruses like West Nile to rapidly adapt to changing environments when introduced to new geographic regions," said Aaron C. Brault, a virologist at the Center for Vectorborne Diseases in the Department of Pathology, Microbiology and Immunology of the UC Davis School of Veterinary Medicine.

"The study also suggests that the genetic mutations that create such adaptive changes may result in viral strains that have unexpected symptoms and patterns of transmission," Brault said.

A variety of North American bird species, including billed gulls, house finches, crows and black-billed magpies, are extremely susceptible to West Nile virus. In fact, a hallmark of the West Nile virus in North America has been how deadly the virus has been among wild and captive birds. Particularly vulnerable to West Nile virus is the American crow, which is common in urban and suburban areas as well as in all natural habitats except the Southwestern deserts.

Because the American crow is so common and so highly susceptible to West Nile virus, it has served as the sentinel species in North America. Epidemiological studies have found that deaths of American crows due to West Nile virus are associated with higher rates of infection among mosquito populations and clusters of the disease in humans.

Read the complete article at [www.vetmed.ucdavis.edu/whatsnew/article.cfm?id=1783](http://www.vetmed.ucdavis.edu/whatsnew/article.cfm?id=1783).

As of August 28, 2007 a total of 908 dead birds have tested positive for West Nile virus from 26 states or districts in the US. Of the 908 birds, 691 have been corvids.

Dead bird testing remains a viable tool for the early detection of West Nile virus in the environment, particularly in regions that have had limited West Nile virus activity, such as Washington State.

## Rodent's ticks can cause relapsing fever

By David Nash and Ben Hamilton, WA DOH Zoonotic Disease Program



Rural cabins are a potential place where people can come into contact with soft ticks. Keeping rodents (and their ticks) out of living areas is one of the best ways to avoid contracting tick-borne relapsing fever.



Dorsal view of the female soft tick *Ornithodoros hermsi*, the vector of *Borrelia hermsii*, which can cause tick-borne relapsing fever in people.

Recent infections of tick-borne relapsing fever (TBRF) illustrate the need to eliminate rodents from living areas because their ticks can spread disease.

Three cases of TBRF have been identified this year in Washington. One person was exposed while staying in a rustic cabin with visible evidence of rodents in Okanogan County. Another person moved into a place in Spokane County that was infested with rodents and was likely exposed to the tick-borne disease before the rodents could be eradicated.

TBRF is an infection caused by *Borrelia* bacteria, which is carried by wild rodents and spread to humans by the bite of an infected soft tick. These ticks feed at night for brief periods of time (15 minutes to 2.5 hours) and people are often unaware when they are bitten.

The symptoms of TBRF usually appear about a week (range 4 to 18 days) after the bite of an infected tick and include fever, headache, nausea, and muscle and joint pains, which lasts for 2 to 9 days. The fever goes away and then "relapses" again. A rash may appear during the fever periods. TBRF may be tough for doctors to recognize, but can be treated with antibiotics. Relapses can be serious if not treated.

"Tick-borne relapsing fever is the most common tick-borne disease in Washington," said Rebecca Baer, epidemiologist at the state Department of Health. "People are often exposed when vacationing in the rural mountainous areas during the summer months."

Soft ticks, which are different than hard ticks that can transmit Lyme disease and Rocky Mountain spotted fever, live in dark, cool places such as rodent burrows, nests, and buildings that rodents inhabit. Soft ticks can survive for up to 20 years and *Borrelia* bacteria within them can be spread via a bite for over 10 years. Soft ticks prefer to feed on rodents (squirrels, chipmunks, and mice), but may seek out humans if rodents are scarce.

Direct control of rodents and ticks in an infested building is necessary for comprehensive prevention of TBRF.

"Getting rid of rodents without doing any tick control may actually increase the risk of people becoming infected with this tick-borne disease," said Liz Dykstra, public health entomologist with the state Department of Health. "If the rodents are not there, the hungry ticks will seek out other mammals to feed on."

### Tips to Reduce Risk of Tick-Borne Relapsing Fever

- Check sleeping areas for evidence of rodents – holes in the floor or walls, shredded material from mattresses, and rodent droppings or nests.
- Don't sleep on the floor or on a bed that touches the wall. If the dwelling has been unoccupied, change and wash all bedding before use.
- Seal up openings through which rodents might enter.
- Keep all food and garbage in tightly sealed containers. Clean up leftover food.
- Avoid feeding squirrels, chipmunks, and other rodents around dwellings.
- Eliminate woodpiles in or near the dwelling. Store firewood outside, away from walls, on raised pallets.
- Use spring-loaded rodent traps. If you use poison bait, follow directions carefully.
- Wear gloves and spray contaminated rodent areas with bleach and water solution before disposing, see [hantavirus](#) concerns.
- Indoor insecticide sprays or foggers can be used to kill ticks, follow the directions.
- Consider hiring a licensed exterminator for rodent and tick control.



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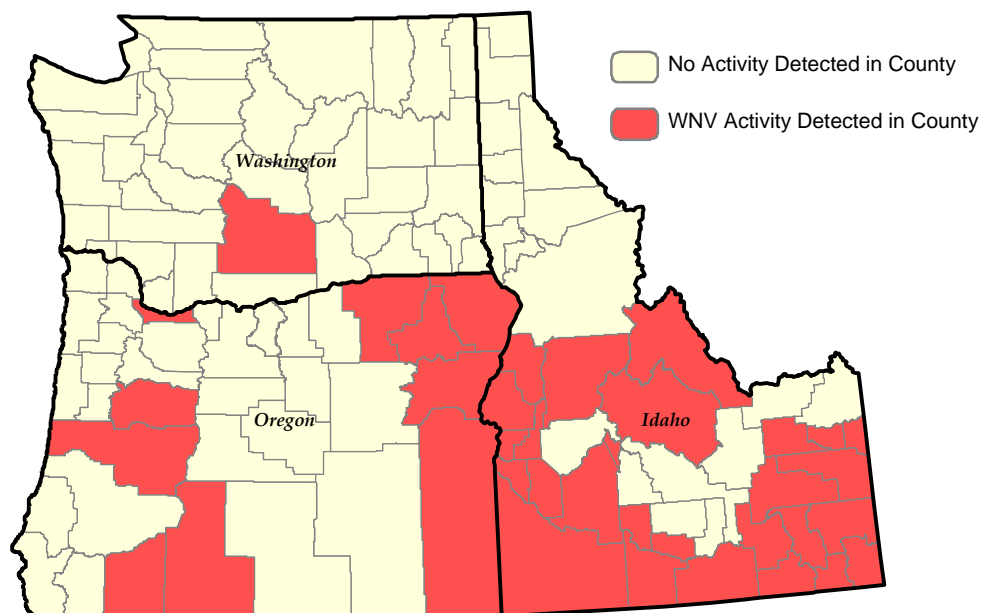
ZD Program Web site

[www.doh.wa.gov/ehp/ts/ZOO.HTM](http://www.doh.wa.gov/ehp/ts/ZOO.HTM)

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## West Nile virus activity in the northwest, 2007



Source: Washington (August 30, 2007), Idaho (August 30, 2007), Oregon (August 29, 2007) State Health Department Web Sites

### WNV positive in the northwest

Washington: 4 horses

Idaho: 54 humans, 10 horses/other mammals, 12 birds, 17 counties w/ mosquito pools

Oregon: 6 humans, 6 horses/other mammals, 26 birds, 28 mosquito pools

West Nile Virus Weekly Update: [www.doh.wa.gov/ehp/ts/Zoo/WNV/weeklyupdate.pdf](http://www.doh.wa.gov/ehp/ts/Zoo/WNV/weeklyupdate.pdf)

## Guidance for Surveillance, Prevention, and Control of Mosquito-borne Disease

The 2007 edition of the *Guidance for Surveillance, Prevention, and Control of Mosquito-borne Disease* is available at [www.doh.wa.gov/ehp/ts/Zoo/WNV/guidance.pdf](http://www.doh.wa.gov/ehp/ts/Zoo/WNV/guidance.pdf). It replaces the 2003 *Mosquito-borne Disease Response Plan*.



## Zoonoses news and research headlines

[Encephalitis from West Nile: Who's at risk?](#)

Reuters Health Information, August 17, 2007

[Evolution of influenza A viruses in wild birds](#)

Journal of Wildlife Diseases, 43(3\_Supplement), 2007

[FDA approves second West Nile virus screening test for donated blood and organs](#)

U.S. Food and Drug Administration, News Release, August 28, 2007

[Marburg virus detected in common African bat](#)

PLoS ONE 2(8): e764, August 22, 2007

[Scientists seek better tests for Lyme disease](#)

TIME, Health & Science, August 13, 2007

[USDA distributes oral rabies vaccine across Appalachian states](#)

US Department of Agriculture, News Release, August 24, 2007