

# Zoonotic Disease Newsletter

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

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## West Nile confirmed in dead hawk from Mabton area

Washington State Department of Health, News Release, September 26, 2007

A red-tailed hawk from the Mabton area in Yakima County has tested positive for West Nile virus — the first infected dead bird found in the state in 2007. Eight horses from Yakima County have also tested positive for West Nile virus this year. There have been no reports of people being infected with the virus within the state so far this season.

Raptors such as hawks, eagles and owls are susceptible to West Nile virus. Crows, jays, magpies and ravens are also more likely than many other birds to die after being infected with the virus. These types of dead birds are targeted for testing and should be reported to local health agencies.

After picking up West Nile virus from an infected bird, a mosquito can infect other animals, such as people and horses. Testing animals provides an early warning for local communities.

"When animals such as birds or horses test positive for West Nile, it's an indication that the disease is in the mosquitoes of that area," said Dorothy Tibbetts, manager of the zoonotic disease program at the state Department of Health. "We're fortunate that the mosquito season is waning with the cooler weather and West Nile virus has been limited in Washington this year."

Last year, West Nile virus continued its expansion into new areas of the Northwest. In Idaho, more than 1,000 people were sickened by West Nile virus infection and 23 died. Oregon had about 70 human cases. Washington reported its first cases of people infected within the state in 2006. West Nile virus activity appears to have dropped off in the northwest in 2007, but it may be a problem in the future.

"Some years may be worse than others but West Nile virus is here to stay," said Tibbetts. "We can all do things to guard against West Nile infection. The key is avoiding mosquito bites."



## West Nile high risk times identified – helps target control

By Lance Nixon, South Dakota State University Research News

Although West Nile Virus can be transmitted at any time of day, 10 p.m. to 2 a.m. are the hours in which the mosquitoes that spread West Nile Virus are most often on the prowl for blood.

South Dakota State University professor Mike Hildreth, a research parasitologist in SDSU's Department of Biology and Microbiology, said that is one of the findings emerging in SDSU's mosquito research this summer.

Ongoing research by Hildreth and his SDSU colleagues in cooperation with the South Dakota Department of Health is making it easier to protect human health against West Nile Virus.

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*West Nile high risk times* continued from page 1

A rotator trap is like a standard CO2 baited light trap except that it has eight cups which are set to rotate during a trapping event. SDSU researchers use a CO2 tank to attract mosquitoes and have modified the cups with collection bags to improve sampling.

Mosquito control activities and public health messaging can be better targeted when peak mosquito activity is identified.

Although South Dakota has about 43 species of mosquito, Hildreth said a species called *Culex tarsalis* is the primary vector of West Nile Virus in the state.

Research at SDSU has previously shown that *Culex tarsalis* fares well even in drought years, just as in other western states; that *Culex tarsalis* prefers to breed in flat, grassy lowlands that are temporarily flooded after rainfall events; and that the month of August is generally the most dangerous month in South Dakota for transmission of the virus.

This summer, Hildreth's graduate student, Matt Wittry, is using a trap that fools mosquitoes into thinking they will get a blood meal. The research tries to pin down the high-risk times of day for transmission of the virus in South Dakota.

"We have what's called a rotator trap and it rotates the collection cups every two hours. We have been using the rotator trap to collect mosquitoes every two hours. Then we count them and send them off to be tested to see if they are carrying West Nile Virus," Hildreth said. "From that we know that generally from about 10 p.m. to about 2 a.m. is the time at which *Culex tarsalis*, that vector mosquito, is biting most frequently, or is at least seeking a blood meal most frequently."

Researchers recommend that individuals use insect repellent and wear long-sleeved, loose-fitting clothing whenever they're outdoors between dusk and dawn. However, the SDSU research shows they need to be particularly vigilant between 10 p.m. and 2 a.m.

The research also tells communities what times will be most effective when using insecticide fogs to kill adult mosquitoes. Mosquitoes have to be out feeding in order for those insecticide fogs to work best, Hildreth said.

In addition, the SDSU findings can suggest to communities that it's important to spray around areas such as ball diamonds if they are still in use during high-risk times.

SDSU Extension Pesticide Education Coordinator Jim Wilson added that Hildreth's research, relayed by SDSU Extension professionals and the South Dakota Department of Health, is already providing practical guidance for those who carry out mosquito control campaigns across South Dakota. Many communities around the state have reported delaying their ULV mosquito fogging applications until later in the evening in order to more effectively control mosquito populations and reduce the potential for West Nile Virus transmission.

Spraying for adult mosquitoes is only one aspect of mosquito control efforts in South Dakota. Communities also are establishing buffer zones around communities and treating *Culex tarsalis* larval habitats in those buffer zones.

Hildreth said some of SDSU's work is based on a California study of *Culex tarsalis*' feeding habits, and reaches essentially the same conclusions, despite the differences in geography.

This year's work at SDSU also will look into whether the vector mosquito's feeding habits vary with temperature. Scientists still don't know if *Culex tarsalis* is cued by temperature, by daylight, or by some other factor.

SDSU's work this summer also will be looking at how well *Culex tarsalis* populations will rebound after recent rains in parts of South Dakota. Until those rains, it appeared that the vector mosquito populations had already peaked in several areas of the state.

SDSU's mosquito research may be of benefit to neighboring states such as North Dakota, Nebraska, Wyoming, and Montana, which have similar conditions for *Culex tarsalis*. In addition, Hildreth said, southwestern Minnesota has a fairly high population of *Culex tarsalis*.

More on SDSU's work is at <http://biomicro.sdstate.edu/Hildrethm/mosquito/>.

## High-path avian influenza outbreak response workshop



Depopulating poultry flocks infected with highly pathogenic avian flu in Vietnam and burying the carcasses in pits.

The Washington State Department of Agriculture, Washington State Department of Health, and Public Health Seattle-King County are pleased to announce a one-day workshop entitled, *"Multi-Agency Response to a Highly Pathogenic Avian Influenza Outbreak"*. This workshop will be offered in each of the nine Public Health Emergency Preparedness and Response Regions.

Dates and locations include: Oct. 16 in Port Townsend, Oct. 17 in Olympia, Oct. 18 in Tacoma, Oct. 24 in Woodland, Oct. 25 in King County, Oct. 26 in Bellingham, Nov. 6 in Wenatchee, Nov. 7 in the Tri-Cities, and Nov. 8 in Spokane.

Key to any rapid response to contagious disease is what happens at the local level. This one-day workshop will bring together local people who will be "on the ground" if an outbreak of highly pathogenic avian influenza should occur. This workshop will consist of both lectures and an exercise component.

Topics to be covered include: epidemiology of current avian influenza strains, rapid response and containment methods, roles and responsibilities of responders, investigation techniques and control methods.

Staff from the state health department and local health jurisdictions (epidemiology, communicable disease, environmental health, laboratory, and administration), local veterinarians, Reserve Veterinary Corps members, and local emergency responders should plan to attend this workshop.

For more information about the workshop and to register, go to the Washington Public Health Training Network at [www3.doh.wa.gov/waphtn/class.asp](http://www3.doh.wa.gov/waphtn/class.asp)

## IPM helps eliminate need for mosquito adulticiding

By Candace Brassard, Senior Biologist, US Environmental Protection Agency



Bromeliads, and other plants that hold water, were sampled first when Jungle Island staff were trying to identify the park's mosquito development sites. Staff soon found that the park's storm drains and vaults were the major producers of mosquitoes.

Jungle Island (formally known as Parrot Jungle Island) in Miami, Florida, is a zoological theme park known for its exhibits and shows of parrots, flamingos, and other related birds and extensive collection of rare plants and high horticultural standards.

Jeff Shimonski, Director of Horticulture at Jungle Island, initiated an Integrated Pest Management (IPM) program in 1988 to replace the high levels of chemical pesticides and fertilizers used in the park's early history. The mosquito larvae control program was the last step in completing the IPM program. That project began in 2005 and has been a great success.

The Jungle Island project received a Pesticide Environmental Stewardship Program grant from the EPA in 2005 that allowed for sampling and identification of mosquito species in the park and testing of biochemicals for mosquito control.

Shimonski's methodology included rigorous sampling of water sources in the park to identify the status and species of mosquito populations and to monitor the progress of his IPM project. By September 2005, fogging of the park targeting adult mosquitoes became unnecessary due to successful efforts to control larval populations, thereby saving over \$7,000 annually in pesticide application costs and greatly reducing exposure to pesticides.

A new PDF flyer describing the results of the IPM mosquito control program used at Jungle Island is available online at <http://tropicaldesigns.com/ipm.htm>.

The success of the Jungle Island project may serve as an example to others considering the use of integrated pest control.

## State focuses on cleaning up large tire piles

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



The Department of Ecology has hired contractors to clean up unauthorized tire piles that contain more than 800 tires.



Dr. Liz Dykstra, Public Health Entomologist with the Zoonotic Disease Program, dips for mosquito larvae at a tire pile site in Lewis County.



Tire full of water, organic matter, and mosquito larvae.

Sites containing large amounts of waste tires, also known as mosquito incubators or mosquito nurseries, continue to be the target of cleanup efforts by the State Department of Ecology.

About 320,000 old tires at 36 sites in Eastern Washington are now under contract to be recycled or disposed. This is part of a project to clean up over 3 million tires across the state, at a cost of \$7 million.

To pay for the cleanup, the state legislature initiated a \$1 fee for every new replacement tire sold in Washington in 2005. The fee will last until 2010 but Ecology expects to have the 3 million tires cleaned up by 2008. In the 1990s, Ecology spent nearly \$14 million to cleanup 12 million tires.

In addition to providing suitable habitat for mosquito larvae development, tire piles can harbor rodent pests and are a potential fire hazard.

The largest tire pile in the state is in Goldendale, where over 2 million tires are being shredded and disposed and/or recycled by a contracting company.

Ecology requires cleanup contractors to recycle a certain amount of tires. In 2005, nearly 54,000 tires were reused for things such as floor mats, shoe soles, dock bumpers, car parts, retreads, and surfacing. About 25,000 tires ended up in the landfill that year.

"Our statewide progress has been good, and we are happy to continue the work of removing these tire piles" said Cullen Stephenson, Ecology's solid waste manager in a prepared press statement. "We are calling on counties to enforce existing regulations and financial assurance rules to prevent future tires from accumulating."

People can pile 800 tires on their property legally without regulation, unless local solid waste or nuisance ordinances apply, but anything larger is required to be permitted by the local health jurisdiction.

In terms of mosquito production, it doesn't take a lot of tires to create a problem. Over the course of a mosquito season, thousands of mosquitoes can be generated from one tire. Organic material from dead leaves can provide food for the larvae and the insulation of the tire keeps the water warm and speeds up development.

For large tire piles, the top 2-3 layers are where the majority of mosquito larvae will be found developing. This can make surveillance or control more convenient.

Mosquito species frequently found in tires are capable of transmitting West Nile virus, western equine encephalitis, and St. Louis encephalitis. *Ochlerotatus japonicus*, an exotic vector mosquito now establishing itself in Washington, was the dominant mosquito species found in tires in a 2003 West Virginia study.

There are number of ways to eliminate mosquito development in waste tires:

- Remove and properly dispose or recycle the tires.
- Store tires under a cover or tarp so they don't collect rain water.
- Consider the use of larvicides for piles that cannot be disposed or covered.
- Contact the local health jurisdiction to report tire piles of concern.

It's important to remember that tires are just one of many artificial sources where mosquito larvae can develop. Buckets, cans, plastic covers, neglected pools, bird baths, troughs, and clogged gutters with stagnant water sitting for a week or more can produce mosquitoes.

More information about Ecology's waste tire cleanup work is available at [www.ecy.wa.gov/programs/swfa/tires/](http://www.ecy.wa.gov/programs/swfa/tires/).

## First *World Rabies Day* observed

Adapted from CDC's Morbidity and Mortality Weekly Report, September 7, 2007



The first World Rabies Day was observed on September 8, 2007, with the theme, "Working Together to Make Rabies History." On this day, CDC and its global partners will celebrate successes in rabies prevention and control, while recognizing the challenges of global canine rabies elimination, human rabies prevention, and wildlife rabies control. Events were planned in at least 61 countries and included educational presentations, animal rabies vaccination clinics, rabies awareness campaigns, and fundraising activities.

Worldwide, uncontrolled rabies in dogs continues to be the main source of human rabies mortality, accounting for an estimated 55,000 deaths each year. In the United States, dog-to-dog transmission of rabies has been eliminated. However, importation of dogs from rabies-enzootic countries still represents a risk for reintroducing canine rabies into the United States. In addition, cases of rabies in U.S. wildlife have increased recently, with bats as the leading source of human rabies infections. In the United States, rabies remains a potential emerging threat through adaptation to new animal reservoirs, translocation of potentially infected animals, and inadequate vaccination coverage of domestic animals, particularly cats and dogs.

Around the world, the public health infrastructure, including local animal control programs, quarantine stations, veterinarians, and clinicians, will play a vital role in preserving the status of those countries already free from canine rabies and in advancing human rabies prevention worldwide. Additional information about World Rabies Day is available at [www.cdc.gov/rabies](http://www.cdc.gov/rabies) or [www.worldrabiesday.org](http://www.worldrabiesday.org).

Read the CDC's press release announcing the US free of canine rabies at [www.cdc.gov/od/oc/media/pressrel/2007/r070907.htm](http://www.cdc.gov/od/oc/media/pressrel/2007/r070907.htm).

## Unique tool used to find woman exposed to rabid bat

Adapted from ProMED-mail posting by Alan Grill, Toronto Public Health, September 20, 2007

Toronto Public Health has located the woman who had delivered an injured bat to the Toronto Wildlife Centre that later tested positive for rabies. Finding her proved to be very challenging as the Wildlife Centre did not have her updated demographic information. After several attempts to locate her, including a media release, proved to be unsuccessful, one of the communications staff at Toronto Public Health suggested using the Web site "Facebook.com".

The woman's name came up on the website through its search feature, and a message was posted for her outlining the above scenario along with an immediate request to contact Toronto Public Health. Within 2 hours she contacted our office and has been started on rabies post-exposure prophylaxis given her close contact with the rabid bat.

Our team wishes to emphasize to other public health units that "Facebook.com" should be considered a new and helpful form of communication in challenging cases requiring contact tracing.

### Update: Pet Turtle Act of 2007

A provision that would have allowed for the sale of turtles with shells less than 4 inches long was not included along with the FDA reauthorization bill which has gone to the President's desk for signature. Although this provision failed, the two stand alone "Pet Turtle Act" bills remain in the House (HR 924) and Senate (S 540) and could be reintroduced at any time by legislators interested in lifting the sales ban on small turtles.

The FDA banned the sale of small turtles in 1975 to help reduce the number of salmonella infections associated with the reptiles. The ban has prevented an estimated 100,000 cases of salmonellosis annually in children.

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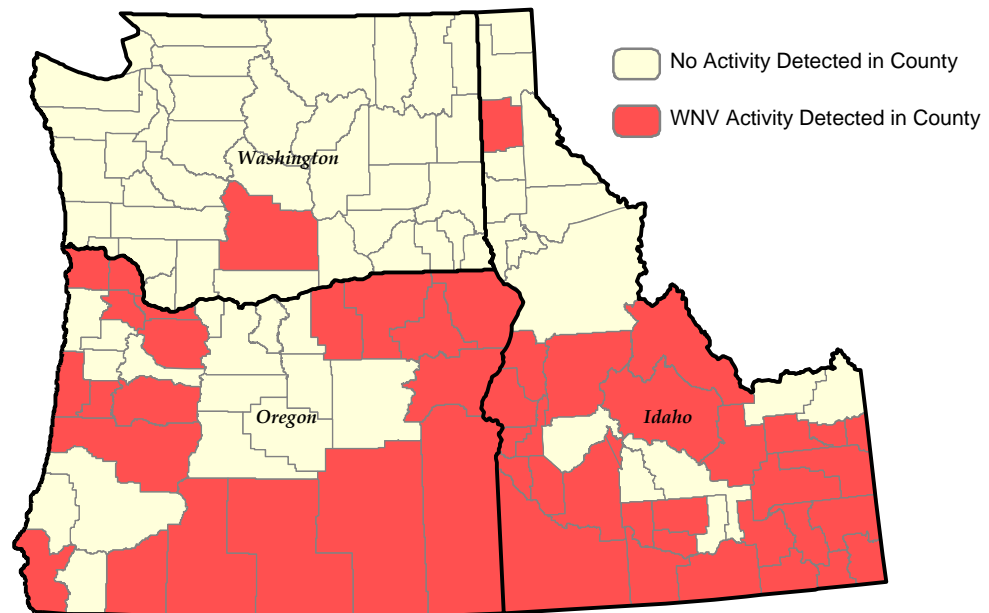
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[www.doh.wa.gov/ehp/ts/ZOO.HTM](http://www.doh.wa.gov/ehp/ts/ZOO.HTM)

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## West Nile virus activity in the northwest, 2007



Source: Washington (Sept. 27, 2007), Idaho (Sept. 25, 2007), Oregon (Sept. 25, 2007) State Health Department Web Sites

### WNV positive in the northwest

Washington: 7 horses, 1 bird

Idaho: 91 humans, 15 horses/other mammals, 14 birds, 17 counties w/ mosquito pools

Oregon: 18 humans, 13 horses/other mammals, 63 birds, 30 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)



The California Department of Public Health developed a *West Nile Virus Survivors* video which can be viewed at [www.westnile.ca.gov/resources.php](http://www.westnile.ca.gov/resources.php) under the Educational Videos heading.

## Zoonoses articles from *Emerging Infectious Diseases*

*Emerging Infectious Diseases*, Volume 13, Number 9–September 2007

[Threat of Hantavirus Pulmonary Syndrome to Field Biologist Working with Small Mammals](#), D.A. Kelt et al.

[Frequent Travelers and Rate of Spread of Epidemics](#), T.D. Hollingsworth et al.

[Detection of Group 1 Coronaviruses in Bats in North America](#), S.R. Dominguez et al.

[Spectrum of Infection and Risk Factors for Human Monkeypox, United States, 2003](#), M.G. Reynolds et al.

[Effect of Interventions on Influenza A \(H9N2\) Isolation in Hong Kong's Live Poultry Markets, 1999–2005](#), E.H.Y. Lau et al.

[Detecting Human-to-Human Transmission of Avian Influenza A \(H5N1\)](#), Y. Yang et al.

[Poultry Drinking Water Used for Avian Influenza Surveillance](#), Y.H.C. Leung et al.