

# West Nile Virus Action Plan

*University of North Carolina at Chapel Hill*

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The following describes UNC-Chapel Hill's Plan for minimizing the risk of West Nile Virus to students, faculty, staff and visitors. The Plan relies heavily on the education and assistance of UNC staff who work outdoors and care for University buildings and grounds.

## West Nile Virus in North Carolina

West Nile virus is a mosquito borne disease that infects birds, horses, people and other fauna. Although it is more harmful to birds, West Nile Fever is a mild disease in most people, characterized by flu-like symptoms. West Nile Fever typically lasts only a few days and does not appear to cause any long-term health effects. In a very small number of people, the West Nile virus causes more severe disease and sometimes death. For every identified case of West Nile encephalitis (viral infection of brain tissue), 100-200 infected people will be less symptomatic and go undetected.

In North Carolina, West Nile Virus was first identified in October 2000 in a Chatham County bird. The first human case was identified in a Vance County man in September 2002. In 2003, twenty-two North Carolinians were infected in state with the virus, and two of them died.

	1999	2000	2001	2002	2003
<b>Nation-Wide (USA)</b>					
Lab-confirmed cases				4,156	7,718
Severe Disease	62	21	66		
Deaths	7	2	9	284	155
Case Fatality Rate				6.8 %	2.0 %
<b>In North Carolina</b>					
People tested				1,043	2,105
Cases				2	22
Deaths					2

In 2003 the virus was identified in birds, horses or humans in 92 North Carolina counties. This Plan follows the recommendations of local and state public health officials and describes reasonable steps to minimize the risk of West Nile virus to people on campus.

## Prevention of West Nile Virus Disease

The best way to protect people from West Nile virus is to avoid mosquito bites, so prevention relies on **protection from mosquito bites** (bite prevention) for those who work or play outdoors, and on **reducing the number of mosquitoes** (environmental prevention). Draining sources of standing water reduces possible breeding areas. In addition, larvicides (to control breeding areas) and other pesticides may be used in conjunction with integrated pest management techniques to reduce mosquito populations. This plan proposes the following measures:

- Grounds currently provides repellent to employees as needed. They also respond to any standing water problems in the landscape on campus.
- The Department of Environment, Health and Safety (EHS) will encourage people who work in or frequent outdoor areas to use a DEET-based mosquito repellent. (See footnote regarding DEET usage).<sup>1</sup> Student Health Service will provide this advice to students who spend time outdoors.
- Facility Services currently does scheduled preventive maintenance on gutters and downspouts.
- Potential mosquito breeding areas are reduced by UNC-Chapel Hill's policy of not using wet or surface retention for storm water management.
- EHS will provide a checklist for departmental building contacts, Grounds and Facility staff to identify and eliminate breeding sites such as empty containers, puddles on construction sites and areas of poor drainage.
- When breeding sites cannot be eliminated, Facility and Grounds staff will consider integrated pest management (IPM) methods to further control mosquitoes and their breeding areas. As an example of good IPM, stocked fish control mosquito larvae in water hazards on Finley Golf Course.

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<sup>1</sup> Products that contain DEET (short for N,N-diethyl-m-toluamide) are the most effective mosquito repellants available. As the concentration of DEET increases, the duration of repellent activity increases. Repellent activity plateaus around 30%, however. Do not use a product containing more than 30% DEET for children. It is not recommended to use DEET/sunscreen combination products – apply sunscreen first, then repellent containing DEET. Reapply DEET only when you are experiencing mosquito bites. It is generally agreed that DEET should not be applied more than once per day for young children. For more information about DEET including recommendations for applying DEET to children, please visit:

- Centers for Disease Control:  
[http://www.cdc.gov/ncidod/dvbid/westnile/qa/insect\\_repellent.htm](http://www.cdc.gov/ncidod/dvbid/westnile/qa/insect_repellent.htm)
- Comparative Efficacy of Insect Repellents against Mosquito Bites, Mark S. Fradin, M.D., and John F. Day, Ph.D. See <http://content.nejm.org/cgi/content/full/347/1/13>
- American Academy of Pediatrics <http://www.aap.org/family/wnv-jun03.htm>
- National Pesticide Information Center: <http://npic.orst.edu/>
- NC Dept. of Health & Human Services: 919-733-3410 or <http://www.epi.state.nc.us/epi/arbovirus/deet.html>.

- EHS and the Student Health Service will also disseminate educational materials to the University community via the web and other means, to provide public awareness training and critical updates. These communications will explain breeding area elimination and mosquito bite prevention. EHS and the Student Health Service will coordinate communication with public health agencies.

### **Possible Future Steps to Prevent West Nile Virus**

Both the State Division of Public Health and the Orange County Health Department are monitoring West Nile virus risks in our area. If advised and so warranted, UNC will consider additional control measures, such as: the application of larvicide pellets to storm drains to control mosquito larvae; and posting areas adjacent to natural areas where mosquitoes may breed, such as wetlands near the Mason Farm area and the Carolina North pond.

Peter A. Reinhardt, Director  
Department of Environment, Health & Safety  
University of North Carolina

# Sample Building and Grounds Checklist

*To minimize Mosquito Breeding Areas and West Nile Virus Risks*

## Grounds - Lawn & Soil

- Are there low spots or potholes that hold water after a heavy rain?
- Are ditches and storm water drainage areas free of trash and debris?
- Are there any areas where standing (stagnant) water can be found regularly?

## Grounds - Other

- Does water collect in the bottom of trash cans?
- Does water collect in plant containers or cigarette butt containers?
- Is there anything else in, on or near the building that is likely to hold water after a heavy rain?

## Roofs

- Do leaves and debris collect easily on the roof or roof drainage systems?
- Is drainage system clear and working properly?
- Does water tend to pool anywhere on the roof or in the drainage system?

## Fountains & Ponds

- Is water in ponds or decorative fountains moving or standing still?
- Are there fish in the water that might eat mosquito larvae?
- Has the water been treated with a larvicide (Bti) to kill mosquito larvae?  
"Mosquito dunks" can be found at most hardware and garden centers.<sup>2</sup>

## Neighborhood

- Are there nearby construction sites that may have potholes or low lying areas that would retain water after a heavy rain?
- Is there anything else (ex. Tires, bird bath) on an adjacent property that would be likely to hold standing water?

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<sup>2</sup> *Bacillus thuringiensis israelensis* (Bti) is a naturally occurring soil bacterium that can effectively kill mosquito larvae present in water. Bti is nontoxic to mammals, birds, and fish.