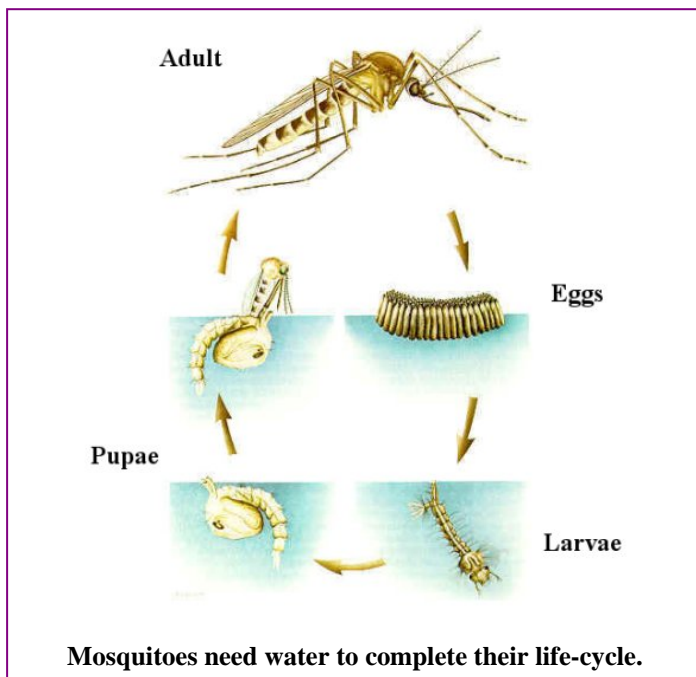


INSIDE THIS ISSUE: **FROM DUSK TO DAWN...  
MOSQUITOES SUCK!!!!!!**

Mosquitoes in urban settings can cause numerous health problems due to their ability to transfer, or vector, viruses and other disease-causing pathogens. At the beginning of July this year, 56 Arizonans had been confirmed to have West Nile virus, and all of the cases have thus far been located in the Phoenix valley. With human cases expected to soar this summer, our best defense is knowledge of the virus and mosquito management.



## The Cycle of West Nile Virus (WNV)

West Nile Virus is a mosquito-borne virus contracted through mosquito bites. Only about 60% of people who have tested positive for the virus ever knew they were being bitten by mosquitoes, so it's advisable to just assume they are about between dusk and dawn.

People of all ages (including children) can contract the virus. About 20% of those who contract WNV will come down with what is called "**West Nile fever**"; the other 80% of those infected show no or only mild symptoms of the virus.

Symptoms of West Nile fever can include:

- \* Fever
- \* Headache
- \* Body aches
- \* Swollen lymph glands
- \* Tiredness
- \* Rash on the trunk of the body

About 1 out of every 150 people with West Nile Virus will develop a severe infection resulting in **encephalitis** (inflammation of the brain) or **meningitis** (inflammation of the lining of the brain and spinal cord). Unlike West Nile Fever, which develops with equal likelihood in persons of any age, the severe infection forms tend to occur more in people over 50 years of age.

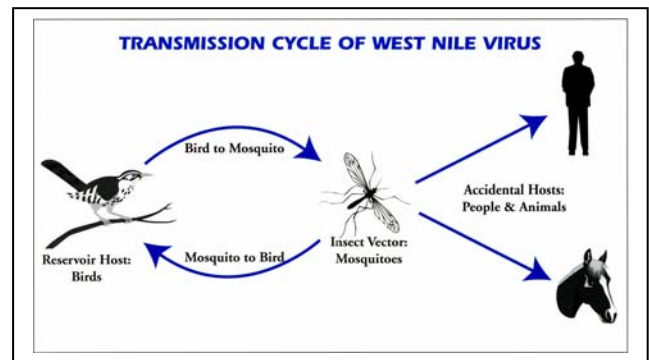
Symptoms of encephalitis or meningitis include:

- \* High fever
- \* Neck stiffness
- \* Disorientation
- \* Muscle weakness
- \* Paralysis
- \* Headache
- \* Stupor
- \* Tremors, convulsions
- \* Coma

## The Cycle

After a mosquito feeds on the blood of a bird infected with West Nile Virus, the virus goes through a short growth period before it is capable of being retransmitted – as few as four days for some mosquito species in Arizona. The infected mosquito, full of virus and ready to feed again, will look for a bird, human, or other animal for its next blood meal.

This is the basic transmission cycle of the virus as it moves easily from bird (reservoir host) to mosquito (vector) and then - incidentally - on to humans or other animals.



Humans and other animals are *incidental hosts* for West Nile virus. A mosquito cannot become infected by biting a human or pet infected with West Nile Virus. Therefore, humans, horses, etc. cannot not further virus transmission and are referred to as "dead end" hosts for the virus.

## Prevention

The best way to prevent West Nile Virus is to minimize the number of mosquitoes since that is how the virus moves from bird host to human. As a general rule, the easiest way to deal with mosquito pests is to prevent them from breeding around us in the first place.

Mosquitoes need wet conditions to lay their eggs and grow from an aquatic larva into a flying adult. HUMANS create the vast majority of the wet conditions used by mosquitoes in the Phoenix valley, and it is likely that many of us have mosquitoes developing in our neighborhoods and own backyards. We cannot eradicate every individual, but there are some very simple steps each of us can take to keep numbers low.



### **IPM Mosquito Management – Fight the Bite!**

The most effective strategy for the community in general is prevention; consider the following:

1. Check flower pots and other containers for excess water.
2. Flush out the water in bird-baths and fountains every few days.
3. Store boats, canoes and other objects so that they do not collect rainwater.
4. Remove water that collects in depressions in tarpaulins covering boats and other equipment or objects. Rinse off water collecting on backyard trampolines and other items.
5. Keep rain gutters free of leaves and other debris that prevent water from raining.
6. Correct drainage problems in yards and playing fields to prevent rain and irrigation water from pooling for prolonged periods; report drainage problems in ditches or along roadways.
7. Fill holes or depressions in trees with sand.
8. Repair leaky pipes and outside faucets, and connect open waste-water drains to a sewage system or construct separate sump or leach lines.
9. Empty water containers for pets and check livestock watering troughs and tanks, or add Gambusia (mosquito eating fish).
10. Larvicides: mosquito “dunks” use bacteria (Bti) that is harmless to humans, pets and the environment. Dunks will effectively kill mosquito larva in any breeding (non-consumptive) water source.

## **3** Ways to Reduce Your West Nile Virus Risk



- ✓ [Avoid Mosquito Bites](#)
- ✓ [Mosquito-Proof Your Home](#)
- ✓ [Help Your Community](#)

### **Avoid Mosquito Bites**

WEAR loose fitting long-sleeves, long pants and socks when outdoors. Mosquitoes may bite through thin clothing, so spraying clothes with repellent adds an additional protection layer.

Apply Insect Repellent Even if you are outside for just a short period of time. Approximately 40% of people confirmed to have WNV have no recollection of being bitten by mosquitoes.

Use a DEET product or a good non-DEET alternative (Bite Blocker or Off Botanicals), and if you are outside for more than a few hours reapply repellent. The higher the temperature the more frequently you must reapply repellent for it to be effective.

- Apply repellents only to exposed skin and/or clothing (as directed on the product label). Do not use under clothing.
- Never use repellents over cuts, wounds, or irritated skin.
- Do not apply to eyes and mouth, and apply sparingly around ears. When using sprays do not spray directly onto face; spray on hands first and then apply to face.
- Do not allow children to handle the products, and do not apply to children's hands. When using on children, apply to your own hands and then put it on the child.
- Do not spray in enclosed areas. Avoid breathing a repellent spray, and do not use it near food.
- After returning indoors, wash treated skin with soap and water or bathe. If you suspect that you or your child is reacting to an insect repellent, discontinue use, wash treated skin, and then call your local poison control center if symptoms persist.

### **Mosquito-Proof Your Home and Yard**

#### **Drain Standing Water**

Mosquitoes lay their eggs in standing water. Limit the number of places around your home for mosquitoes to breed by getting rid of items that hold water.

#### **Install or Repair Screens**

Some mosquitoes like to come indoors. Keep them outside by having well-fitting screens on both windows and doors. Offer to help neighbors whose screens might be in bad shape.

### Check for Indoor Breeding Sites

If a female mosquito wanders inside your home she will utilize any water reservoir she can find. Check for wriggling larvae in the toilet cisterns that are not flushed daily. Maintain water in drain traps. Use sticky tape over floor drains, sink over flows, etc. to see if you can catch mosquitoes emerging from areas you cannot see.

Fogging for adults is a method sometimes employed by the city or county. **For information on fogging in Maricopa County call: (602) 372-3000**

### How to Help Your Community

Gently educate and communicate with the community around you. Report areas that are breeding mosquitoes to the

**Vector Report Complaint Line: (602) 506-6616**

or file your mosquito activity concern at:

[http://www.maricopa.gov/envsvc/forms/mosquito\\_cplt.asp](http://www.maricopa.gov/envsvc/forms/mosquito_cplt.asp)



### Report Dead Birds to Local Authorities

Follow directions given for reporting or submitting dead birds in your community:

[http://www.maricopa.gov/envsvc/FORMS/deadbird\\_start.asp](http://www.maricopa.gov/envsvc/FORMS/deadbird_start.asp)

*Share the poster on the reverse side of this page with your community; use as a reminder to constantly check for mosquito breeding sites in your area*

### Guidelines for submitting dead birds:

- 1) The bird must be freshly dead (less than 24 hours)
- 2) Not scavenged, no odor, no maggots, ants or other insects
- 3) Body must NOT be soft and mushy
- 4) Must NOT be a baby bird
- 5) Must NOT be a pigeon
- 6) Must NOT be a dove
- 7) Birds must be kept chilled, never freeze. Freezing will kill the virus, if the virus is present.
- 8) When handling the bird, please use gloves or the inverted plastic bag method.

### After-Bite Care

Several strategies exist for relieving the itch of mosquito bites. The first step is the clean the bite area with soap and water. Topical corticosteroids can reduce the rash, itching, and discomfort. Topical diphenhydramine and caine-containing derivatives should be avoided because of concerns about inducing allergic contact sensitivity.

Oral antihistamines can be effective in reducing the symptoms of mosquito bites. Use of a cold compress can be helpful, but do not apply ice directly to the skin.

### Some great bug repellents:



DEET-free



Contains DEET

To read more about mosquito-borne viruses which can affect human and pet health visit [www.westnileaz.com](http://www.westnileaz.com), or to report mosquito hot spots call the Vector Department at the AZ Department of Health & Public Services, 602-364-4562.



### Information taken from:

- Bennett, Gary W., John M. Owens, and Robert M. Corrigan. *Truman's Scientific Guide to Pest Management Operations*. 6<sup>th</sup> ed. Purdue University, 2003. 574 pp.
- CDC: Division for Disease Control & Prevention, Fort Collins, CO [www.cdc.gov/westnile](http://www.cdc.gov/westnile)
- Marin/Sonoma Mosquito & Vector Control District website, Cotati, CA: <http://www.msosquito.com>
- Olkowski, William, Sheila Daar, Helgo Olkowski. *Common Sense Pest Control*. The Taunton Press, 1991. 715 pp.
- University of Arizona Cooperative Extension website: <http://cals.arizona.edu/urbanipm/insects/ants/ants.html>
- Womack, M. 1993. *The Yellow Fever Mosquito, Aedes aegypti*. Wing Beats, Vol. 5(4):4.

**For more information on IPM in Schools contact Dawn Gouge or Jennifer Snyder 520-568-2273, [dhgouge@ag.arizona.edu](mailto:dhgouge@ag.arizona.edu)**

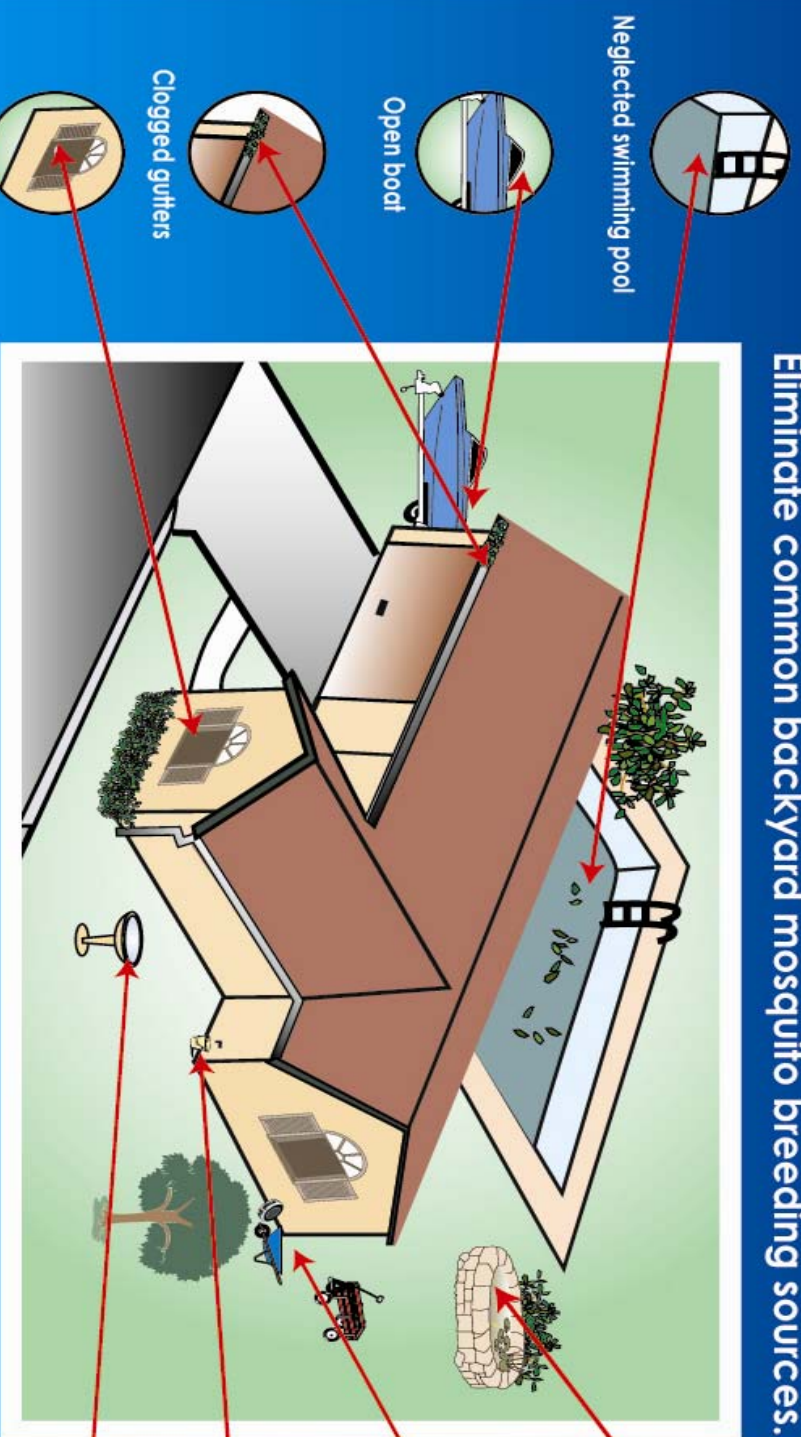


Cooperative Extension  
Urban Integrated Pest Management

Few bugs are bad! More than 95% of all insect species are beneficial to humans.

# Prevent West Nile Virus

Eliminate common backyard mosquito breeding sources.



Neglected swimming pool



Open boat



Clogged gutters



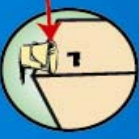
Broken screens



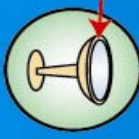
Poorly maintained pond  
(Stock with mosquito  
large-eating fish)



Items that hold water for  
more than a few days



Leaky watering equipment



Birdbath  
(Change water twice a week)

Protect yourself from mosquito bites:

- Avoid outdoor activity during peak mosquito times – dusk to dawn
- Wear long, loose, light-colored clothing
- Use insect repellant when outdoors after sunset



This poster was adapted from the Virginia Department of Health and is reprinted with permission. 2003

For more information, visit the Arizona Department of Health Services web site: [www.hs.state.az.us](http://www.hs.state.az.us)