

Oregon State University Extension Urban Entomology Notes

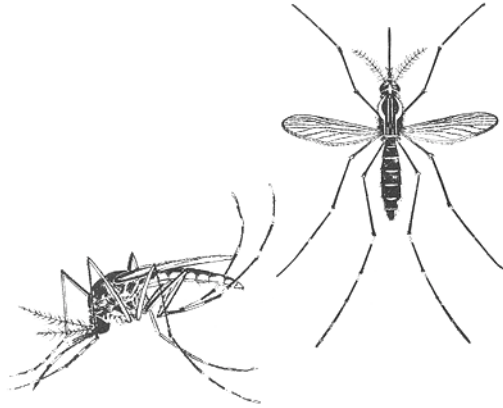
<http://www.ent.orst.edu/urban/home.html>

Mosquito Control

*biology and control
information for grow-
ers & homeowners*

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Jack DeAngelis
Extension entomologist
deangelj@bcc.orst.edu
voice: 541-737-5499



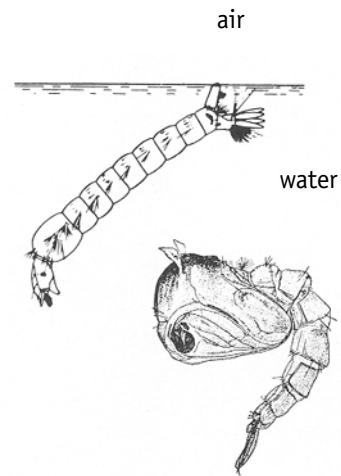
Human-biting mosquitoes. Note long legs and overall body shape.

Quick, what insect has had the most impact on human history and human health? Answer: the mosquito. Mosquitoes have caused, and continue to cause, devastating epidemics that significantly affect people's health and well-being. Malaria, a mosquito-transmitted pathogen, alone is responsible for millions of deaths and disabilities each year mostly in tropical areas of the world.

Female mosquitoes must get a blood meal in order to lay eggs. By taking the blood meal she may infect her host with diseases such as encephalitis, yellow fever and malaria. World-wide malaria is still the most important infectious disease. While we are lucky here in Oregon that malaria no longer is a threat, less than a hundred years ago malaria was common in the US as well.

Biology

Female mosquitoes are blood-feeders whereas males are not (sorry ladies). Females need the extra protein in blood in order to mature their eggs. Eggs are laid in still waters such as lakes, ponds or artificial containers. Therefore, control efforts should be directed at these breeding sites. Eggs require only a short time to hatch and aquatic larvae develop in water over 1 to several weeks, feeding on other aquatic organisms. Larvae breath air so most have a air tube that penetrates the water surface. Adults live only long enough to mate and lay eggs, usually several days to weeks.



Mosquito larva (top) and pupa. Both occur in water near the surface. Note air tube on larva extending to water surface.

Control

Effective mosquito control programs integrate habitat modification, control of aquatic larvae and suppression of adult mosquitoes. Often, mosquito control is best accomplished by organized vector control associations or "mosquito abatement districts". Contact your local government or try the American Mosquito Control Association (<http://www.mosquito.org>) for additional information.

Habitat modification should be your first concern. Since mosquitoes require standing water you should drain these areas whenever possible. Clean gutters, flush fountains and birdbaths once a week, empty or treat any container that holds standing water for more than a week. Even temporary puddles following rain or snow melt can support a thriving mosquito community.

Control of larvae usually is done with insecticides or oil applied to the water. This can be tricky since aquatic organisms of all sorts are extremely sensitive to anything added to their environment. *Bacillus thuringiensis* subsp. *israelensis* (*Bt*) is a natural bacterium that infects and kills mosquito larvae. It is highly selective, killing only mosquitoes and larvae of a few other related flies such as black flies. *Bt* is produced commercially and marketed in a variety of formulations. For the homeowner, *Bt* is formulated into blocks that can be floated in ponds and fountains. These blocks release the bacterium as they dissolve. Very small fountains can be treated with boiling water provided that no other organisms are present.

Control of adult mosquitoes is usually done by area-wide fogging with insecticide. Check with your local government regarding procedures for area-wide control.

Natural enemies such as fish, birds and bats prey on mosquitoes but alone may not reduce adult numbers to acceptable numbers. In some areas the encouragement of bats with artificial bat houses has been useful.

Bite Prevention

If contact with mosquitoes is unavoidable then bite prevention is your only recourse. Repellents containing DEET (N,N-diethyl-3-methylbenzamide or N,N-diethyl-meta-toluamide) work extremely well and have a good safety record when used according to directions. Generally concentrations of 10-35% DEET are adequate. DEET-based repellents may damage plastics and synthetic fabric but can be applied to natural fabrics. For children use a repellent that contains 10% DEET or less and apply it more often if needed. Food supplements and natural herbs have not been as effective as DEET-based repellents. Other topical lotions (those that do not contain DEET as the active ingredient) are far less effective as well.

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