

Mosquitoes

With the onset of warmer weather, now is the time to confront mosquitoes. Mosquitoes belong to the order Diptera, the True Flies. There are over 2,500 species in the world, approximately 200 occurring in the United States. Some mosquitoes are capable of transmitting diseases such as yellow fever, malaria, encephalitis and West Nile virus to humans and animals.

Mosquitoes all share a common trait, a life cycle consisting of four separate stages: egg, larva, pupa and adult. Temperature and species determine how long mosquitoes take to develop into adults.

Only female mosquitoes require blood meal (protein) for egg production. Cattle, horses, birds and smaller mammals are preferred. Humans are not first choice. Morning, dusk and cloudy days are prime feeding times. After biting, a female lays eggs “egg raft” on stagnant water; each egg hatches and a larva “wiggler” emerges. The larva feeds and lives in water until it becomes a pupa or “tumbler”. The pupa no longer feeds and emerges from its case as a fully developed adult, ready to repeat the life cycle.



What can be done to control these pests?

The American Mosquito Control Association (AMCA) with the Environmental Protection Agency (EPA) advocates both individual and public use of Integrated Mosquito Management (IMM). The basis of IMM follows:

- surveillance
- source reduction where larvae develop
- biological control
- use of reduced-risk insecticides
- public education

Surveillance prevents large larvae populations. State, county or city agencies study diseases harbored by domestic and nonnative birds, and use maps, aerial photographs, biting counts, light traps and reports from the public to determine control measures. In Clark County, the Mosquito Control District's number is (360) 397-8430.

The most important step in IMM is the reduction of breeding habitat. Water, as little as a tablespoon, is an integral part of their habitat. Some life cycles are short (four days) while others last as long as one month. Empty, recycle or dispose of old tires, garden containers, tin cans, buckets and any container that collects water. Clean rain gutters, faucet areas, air conditioner units, and repair door/window screens. Replace outdoor lights with yellow “bug” lights. At least once a week, change water in birdbaths, fountains, wading pools. Stock ponds with top feeder minnows known as Mosquito Fish (*Gambusia*). Flush livestock troughs at least twice a week, drain puddles

and fill swampy areas. Arrange canvas tarps around boats, pools, etc., so water will drain. If ditches contain stagnant water, report to local Mosquito Control District. Do not attempt to clear ditches as they may be protected.

Mosquito controllers do use chemical and biological control. *Larvicides* are applied in a mineral oil base to form a thin film on the water's surface, causing the larvae and pupae to drown. For ornamental pools, biorational *larvicides* commercially sold as "Mosquito Dunks" and "Mosquito Bits" can be purchased at home/garden or pet stores. Heavy adult infestations require the use of *adulticides*. Contact local Mosquito Control Districts for recommendations.

Mosquitoes can find a human target from 20 feet away by following an individual's exhaled carbon dioxide, skin temperature and sweat. Protection begins by wearing long sleeve shirts, long pants, hats and avoiding "peak" mosquito time periods. The addition of a repellent containing DEET, gives added security for up to 6 hours. As always, apply sparingly only to exposed skin, follow directions on package and exhibit special care with children. Pheromone-containing repellents can be used on clothing and camping gear to repel both mosquitoes and ticks.

West Nile virus was first detected in the United States in 1999. It has migrated to 44 states. The State of Washington confirms the virus in Pend Oreille, Snohomish, Island and Whatcom counties. There have been no reported human cases. Local veterinarians have vaccines available for pets and farm animals. Statewide surveillance of birds, animals and humans will be ongoing. Do not pick up any dead bird or animal. Call local Washington State Department of Health officials or [contact them through their web site](#).

References

Feign, Sue. Mosquitoes: The Good, The Bad, and The Ugly. *Master Gardener News Clark County Master Gardeners & Master Gardener Foundation*, March 2003: 4-5.

Floore, Tom (2002). Mosquito Information. Retrieved April 1, 2003. [The American Mosquito Control Association](#).

[Learn the Issues: Pesticides, Chemicals and Toxics](#). Retrieved April 1, 2003. United States Environmental Protection Agency.

[West Nile Virus](#). Retrieved April 1, 2003 from Washington State Department of Health, Environmental Health Programs Office of Environmental Health and Safety website.

[Mosquitoes Take The Bite Out of the Bug!](#) DOH Publication 333 046 [Electronic version] retrieved April 1, 2003. Washington State Department of Health.

