



# Mosquitoes and People:

## A Balancing Relationship



Flying mosquito: Photo courtesy of CDC/ Frank Hadley Collins

Mosquito pile under microscope: Photo courtesy of NPS/ Fire Island National Seashore

### A Natural Controversy

For many years people have struggled with how to manage mosquitoes in a way that is ecologically responsible. With West Nile virus (WNV) now found across the entire United States, the balance between protecting human health and the environment has become a topic of increased public concern. Mosquitoes play a vital role in our priceless ecosystems and should be appreciated for their ecological value.

While mosquito bites can be itchy and annoying, only a very small fraction of mosquitoes will carry and transmit WNV. Also, the use of pesticides to manage mosquitoes as a nuisance exposes animals, including people, to unnecessary levels of harmful chemicals and can be ineffective in reducing the potential for disease transmission and circulation. Only under precise conditions can viruses, such as WNV, spread within the mosquito population enough to present a human health threat. In such cases, the application of pesticides in an appropriate manner may be necessary to reduce disease risk.

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## Mosquito Lifecycle

After a female mosquito bites a host, it lays its eggs in standing water or at a site that will later be flooded. Depending on species, these sites can range from discarded cups to huge marshes. After the eggs are laid, it takes days or even months for them to hatch. Larvae breathe while hanging upside down, using tubes that extend to the water's surface. They feed on suspended micro-organisms and detritus. After about 10 days, larvae emerge as adults. Female mosquitoes will then mate, seek a host, and lay eggs to continue the lifecycle. Male mosquitoes only feed on plant juices and nectar, find a female to mate with and die soon after.

## Their Important Role in Nature

Adult mosquitoes serve as food for dragonflies, damselflies, bats and birds. As larvae, they are a primary food source for other larger larvae, diving beetles and small fish. These small predators are later eaten by larger animals such as fish, which some people catch for food or to sell. While foraging for nectar, mosquitoes can potentially pollinate selected species of plants.

## Conserving Our Natural Resources

Many animals, such as bees, are very sensitive to the pesticides used for mosquito control. In locations with sandy soil, such as coastal areas, pesticides can easily leak into vulnerable ground water systems used for drinking and cleaning. Marshes are also very valuable resources that support a great diversity of life and help protect us against storm damage. So, it is important to keep these ecosystems healthy and clean of potentially harmful chemicals.

## Protecting the Public Against Disease

There are many parks in the National Park System, such as Fire Island National Seashore, that have developed mosquito surveillance programs to monitor mosquito-borne diseases. These programs usually have a response plan in place to deal with possible public health threats. If a disease is found within or near the park, an appropriate response will be initiated. If serious, this can include public notification, closing sections of the park to the public, and/or spraying insecticides.

## Personal Protection

Help prevent mosquitoes from artificially breeding by removing standing water around your home, such as in buckets and clogged gutters. Simple sanitary practices are effective and can minimize the need for pesticide use. When in areas with mosquitoes, use a repellent. Commercial repellents with DEET can be quite effective, as can some newer products and some natural repellents. When possible, wear long sleeve shirts and pants.

Use all products as intended and closely follow directions on label.

## Interesting Facts:

-  A mosquito's wing beats about 300-600 times per second.
-  Only female mosquitoes bite animals and humans for blood, which provides protein and fat to nourish their eggs.
-  A mosquito's life span can be from 3 to 100 days.
-  A female mosquito can lay 100 to 300 eggs at one time.
-  Not all species of mosquitoes bite humans.
-  Mosquitoes DO NOT transmit AIDS.
-  Mosquitoes are attracted to warmth, odor, moisture and Carbon dioxide.

## For more information on mosquitoes and West Nile virus:

U.S. Geological Survey: <http://www.usgs.gov>

U.S. Center for Disease Control: <http://www.cdc.gov>

C&O Canal: <http://www.nps.gov/choh>