

# VECTOR CONTROL BRANCH



*Aedes aegypti* Image: USDA, ARS

## MOSQUITOES

Hawaiian names: adult mosquitoes: “makika”  
mosquito larva: “naio makika”

Mosquitoes in Hawai‘i are generally regarded as nuisance pests, but elsewhere they are the vectors of pathogens that cause serious diseases and deaths. Diseases transmitted by infected female mosquitoes biting humans include: West Nile virus; encephalitis, yellow fever, dengue, malaria, and filariasis. Although Hawai‘i has none of these human diseases at present, dogs acquire heartworms (filarial worms) from infected mosquitoes biting them, and native birds often die from bird malaria and bird pox in lowlands where infected mosquitoes are prevalent.

### Mosquitoes in Hawai‘i

The six biting (blood feeding) species of mosquitoes can be divided into two types based on their biting habits:

#### Day-biting Mosquitoes

The four species, *Aedes albopictus* (Asian Tiger Mosquito), *Aedes aegypti* (Yellow Fever Mosquito), *Aedes (Ochlerotatus) japonicus* (Japanese or Rockpool mosquito), and *Wyeomyia mitchelli* (Pineapple lily mosquito), are active only during the daylight periods and somewhat at dusk (*Aedes japonicus*). Because of a short flight range of only 100-150 yards, their presence at your home usually indicates a nearby breeding source. Day-biting mosquitoes breed in relatively clean water found in tree holes, plants, rock holes, and all types of man-made containers. *Aedes* mosquitoes are particularly attracted to discarded tires. They do not normally breed in ground pools or in water that contains soil. *Wyeomyia mitchelli* breeds almost exclusively in leaf axils of bromeliads (pineapple lilies). *Aedes albopictus*, *Aedes aegypti* and *Aedes japonicus* are black mosquitoes with white markings. *Wyeomyia mitchelli* is brown with an abdomen that is white on the lower half. *Aedes albopictus* is the most common day-biting mosquito. Currently, *Aedes aegypti* and *Aedes japonicus* are found only on the Big Island of Hawai‘i.



*Aedes albopictus*

#### Night-biting Mosquitoes

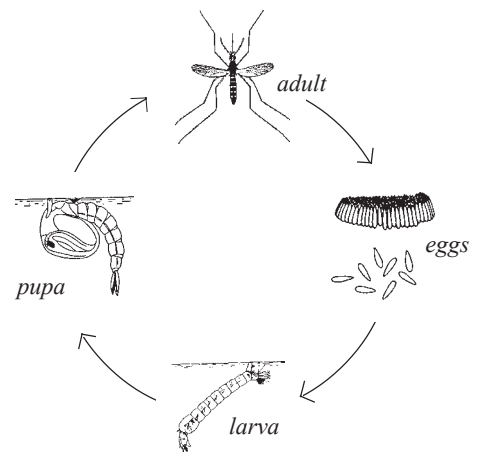
The two species, *Culex quinquefasciatus* (Southern House Mosquito) and *Aedes vexans nocturnus* (Inland Floodwater Mosquito), are active from dusk into the night. Their presence at your home may not indicate a nearby breeding site. They have a flight range of several miles. *Culex quinquefasciatus* will breed in all types of human-made containers but prefers ground water containing rotting organic matter. *Aedes vexans nocturnus* breeds exclusively in flood waters. Its eggs, laid in dry, lowland soil, remain dormant until flooding causes them to hatch. Both *Culex quinquefasciatus* and *Aedes vexans nocturnus* are brown mosquitoes, but only *Aedes vexans nocturnus* has white stripes around its leg joints. *Culex quinquefasciatus* is found on all islands and is the most common night-biting mosquito in Hawai‘i.



*Culex quinquefasciatus*

## Life Cycle

Mosquitoes go through a life cycle known as complete metamorphosis. They start as eggs deposited either singly or in “rafts” by females that have had a blood meal. The eggs hatch into the larval stage, commonly known as “wrigglers”, and live in water passing through 4 larval stages. The next stage is the pupa, commonly known as “tumbler” also living in water. After the pupal stage is the adult stage. Most female mosquitoes feed on blood and males feed on flower nectars or other similar substances in nature.



## Control Methods Around the Home

### Finding Breeding Sites

Intolerable mosquito nuisance usually indicates a nearby breeding source. Make a systematic and thorough inspection around your home. Common breeding sites are in water found in vine bowls, clogged roof gutters, cans, bottles, old tires, unused swimming pools, unused fish ponds, pineapple lilies, spider lilies, hollow bamboo stumps, hollow traveler’s tree stumps, uncapped hollow tile walls, uncapped fence pipes, and overflow trays under house plants.

### Permanent Control

1. Remove, repair, or empty everything that could contain water and become breeding areas for mosquitoes on your premises.
2. Use mosquito-eating fish, such as guppies, in fish ponds, unused swimming pools, or other large containers that cannot be removed or emptied. Don’t release these fish into natural water sources, such as streams or lakes, as they are not a native species.
3. Install or repair window screens and doors to keep out mosquitoes. Screens are your best protection against mosquito nuisance in your home.

### Temporary Control

1. Eliminate adult mosquitoes with aerosol insecticides labeled for flying insects.
2. Use insecticides specifically labeled for controlling mosquito larvae in breeding sites that cannot be emptied or removed. Consult your garden shop or chemical company information on the internet for available insecticides.
3. For personnel protection use insect repellents containing DEET (N, N- diethyl-m-toluamide) at 30 to 33% for adults and 7.5% for children under 12 years. DEET should not be used on babies less than 2 years of age. Another material, picaridin (KBR 3032) at 7%, is also recommended by the Centers for Disease Control. When outside, remain covered up with long sleeves and long trousers to help prevent being bitten by mosquitoes.

**CAUTION:** *Certain pesticides and their solvents may cause respiratory irritation. Persons with respiratory diseases should consult their physicians before using any pesticide. IT IS A VIOLATION OF FEDERAL LAW IF PESTICIDES ARE NOT APPLIED EXACTLY AS THE LABEL DIRECTS.*

**For further information and details, contact these Department of Health offices:**

#### O`ahu

99-945 Halawa Valley St.  
Aiea, HI 96701  
Tel: 483-2535

#### Maui

641 Mua Place  
Kahului, HI 96732  
Tel: 873-3560

#### Molokai

Molokai Health Center  
Kaunakakai, HI 96748  
Tel: 553-3208

#### Big Island

191 Kuawa Street.  
Hilo, HI 96720  
Tel: 974-4238

Honoka`a Health Center  
Honoka`a, HI 96727  
Tel: 775-8860

Kona:  
Keakealani Building  
Kealakekua, HI 96740  
Tel: 322-1507

#### Kaua`i

4398-B Pua Loke Street  
Lihue, HI 96766  
Tel: 241-3306



[www.hawaii.gov/health](http://www.hawaii.gov/health)