

**Mosquito Proboscis (Figure 1)**

Photo by Sean McCann



Contra Costa County is home to 23 species of mosquitoes. There are also several types of insects located throughout the county that many people perceive as a mosquito, but actually are different species of insects. **Please note: we do not provide services for insects other than mosquitoes, yellowjackets, and bees.**

Mosquito adults are small, delicate, two-winged flies. At first you might mistake them for the widely distributed, nonbiting midges. However, female mosquitoes differ from similar insects because of their long, slender proboscis (proh-bos-is,-kis), a tubular feeding organ adapted for piercing skin and sucking blood (see Figure 1, above). They need blood in order to produce eggs.

If you were to view a mosquito with a magnifying glass, you would see another characteristic that distinguishes mosquitoes from closely related flies—small scales cover their long, slender wings. Male mosquitoes also have scale-covered wings, but they use their proboscises, or 'beaks', only for sucking plant juices and other sources of sugar rather than blood—they do not bite people or other animals.

- Female mosquitoes bite and take in a blood meal using its proboscis (see Figure 1, above).
- The wings of a mosquito are as long or longer than its body.
- Mosquitoes usually lay eggs in water.

## THE MOSQUITO LIFE CYCLE

Mosquitoes have four distinct developmental stages: egg, larva, pupa and adult. The average time a mosquito takes to go from egg to adult is five to seven days. Mosquitoes require water to complete their life cycle. Prevent mosquitoes from breeding by eliminating or managing standing water.

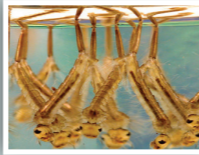
### EGG RAFT

Most mosquitoes lay egg rafts that float on the water. Each raft contains up to 200 eggs. Within a few days the eggs hatch into larvae. Mosquito egg rafts are the size of a grain of rice.



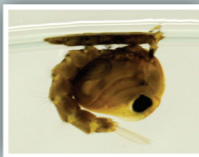
### LARVA

The larva or "wiggler" comes to the surface to breathe through a tube called a siphon and feeds on bacteria in the water. In a matter of days, the larva will molt (shed its skin) four times. On the fourth molt it will change into a pupa.



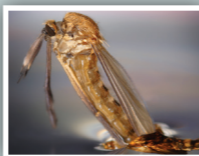
### PUPA

The pupa or "tumbler" cannot eat. It breathes through two tubes on its back. The adult mosquito grows inside the pupal casing and within a few days, when it is fully developed, it will split the casing and emerge to complete the life cycle, or metamorphosis, of the mosquito.



### ADULT

The newly emerged adult rests on the surface of the water until it is strong enough to fly away.



## ABOUT CONTRA COSTA MOSQUITO & VECTOR CONTROL DISTRICT

*Protecting Public Health Since 1927*

Early in the 1900s, Northern California suffered through epidemics of encephalitis and malaria, and severe outbreaks of saltwater mosquitoes. At times, parts of Contra Costa County were considered uninhabitable resulting in the closure of waterfront areas and schools during peak mosquito seasons. Recreational areas were abandoned and Realtors had trouble selling homes. The general economy suffered. As a result, residents established the Contra Costa Mosquito Abatement District which began service in 1927.

Today, the Contra Costa Mosquito and Vector Control District continues to protect public health with environmentally sound techniques, reliable and efficient services, as well as programs to combat emerging diseases, all while preserving and/or enhancing the environment.

### FREE Services for Contra Costa County Residents

<b>MOSQUITOES</b> Inspection and control	<b>TICKS</b> Tick identification
<b>MOSQUITOFISH</b> Free for residential ponds	<b>RATS AND MICE</b> Inspection and advice
<b>YELLOWJACKETS AND BEES</b> Ground-nest and swarm control	<b>SKUNKS</b> Inspection and assistance

**PUBLIC EDUCATION**  
Literature and presentations

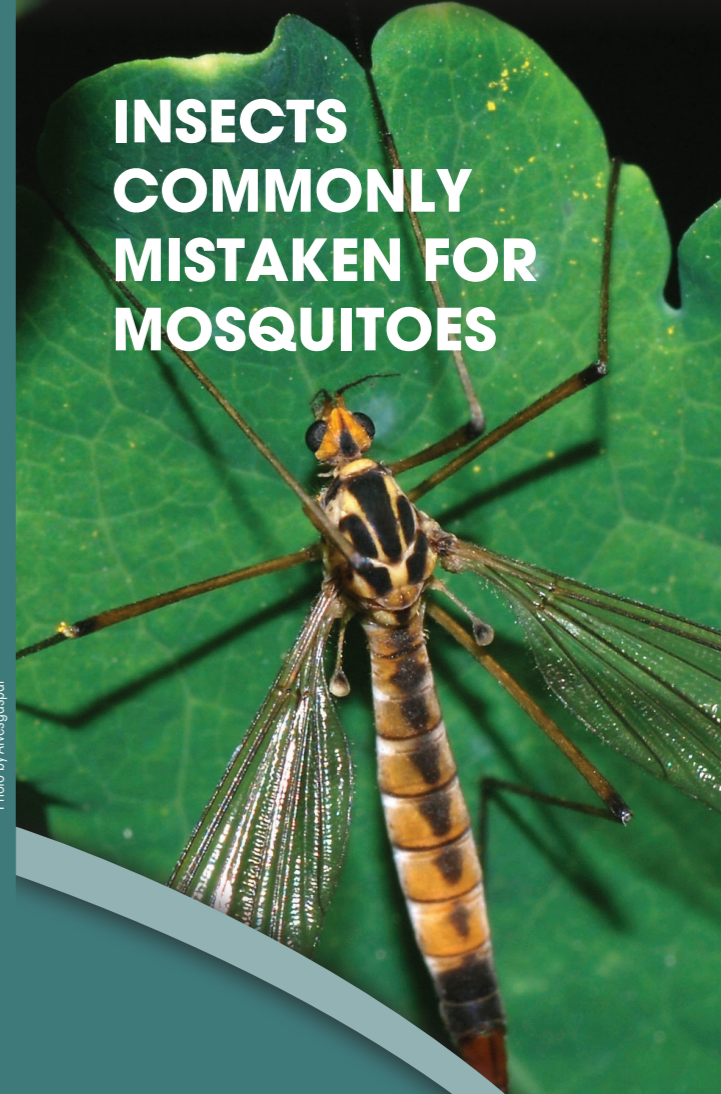
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## INSECTS COMMONLY MISTAKEN FOR MOSQUITOES

Photo by Alvesgaspar



CONTRA COSTA  
**MOSQUITO & VECTOR CONTROL DISTRICT**



# INSECTS COMMONLY MISTAKEN FOR MOSQUITOES



## CHIRONOMID MIDGES (CHIRONOMIDAE)

are the most common type of midge and are often seen swarming in open spaces, particularly near bodies of water. When populations become large, they can be seen resting on walls and screens of buildings. Midges can be distinguished from mosquitoes: they don't

have a biting proboscis and lack scales on their wings. Midge larvae develop in lakes, ponds and streams.

Some species are extremely tolerant of polluted conditions and may be found in enormous numbers in and around sewage treatment plants. They typically live on or in the mud, unlike mosquito larvae that float at the surface of the water. The larvae of many species contain hemoglobin (similar to what's found in our blood) hence the common name 'bloodworms'. Mass hatching can occur and the spontaneous appearance of swarms of adults can be very noticeable in the spring and summer. Adults live for about a week.



## DIXID MIDGE (DIXIDAE)

is commonly found around moist areas with abundant vegetation. Typically at dusk, dixid midges can be seen swarming along the edges of streams and lakes. Adults live less than a week and are incapable of biting. They lack a proboscis and wing scales.

Larvae are found growing at the surface of slow-moving water, are wormlike and swim by bending their bodies in an easily identifiable u-shape. They feed mainly on algae.



## BITING MIDGES (CULICOIDES)

or 'no-see-ums,' are minute insects known for being vicious daytime biters. Coming primarily from damp sandy clay or mud, they are often found close to their source (rivers, lakes and seashores) due to limited flight capacity. Despite their name and small size (some can pass through standard window

screens), they are easily visible to the naked eye.

They are uncommon in Contra Costa County, but in some parts of the world they are a significant pest capable of transmitting diseases of cattle and other livestock.



Photo by Sanjey Acharya

## OWL MIDGES (PSYCHODIDAE)

also known as drain flies or sewer flies, are small, hairy flies that can move about very nimbly, but are weak fliers. They lack a proboscis, but do have scales and hairs on their rounded, paddle-shaped wings.



The larvae are aquatic or semi-aquatic and are very common in sewers and

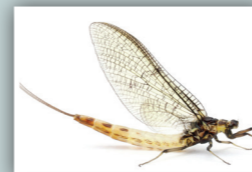
drains where they feed on slime and debris. The larvae are able to live in soapy water. When found indoors they are a good indicator of a leak in a shower/bath, sink, or laundry drain. Cleaning out sink and tub drains and traps can reduce or eliminate indoor nuisance problems.



## CRANE FLIES (TIPULIDAE)

also known as mosquito hawks and mosquito-eaters, are delicate insects and fly poorly. They vary in size from 1/4th of an inch to as large as 1 1/2 inches. The larger varieties are often mistaken as 'giant mosquitoes' but adults are completely harmless and do not bite. They are attracted to lights and often

congregate around porch lights. Despite their common names, they do not feed on mosquitoes; in fact adults of most species do not feed at all. The adult crane fly (pictured above) only lives for about three days. The larvae live in mud and feed on decaying vegetation and other organic material.



## MAYFLIES (EPHEMEROPTERA)

are found commonly near creeks, flood control channels and other water sources. Despite their common name, they are not considered true flies because they have four wings rather than two. Their larvae are found in most aquatic habitats and prefer to live in running water.

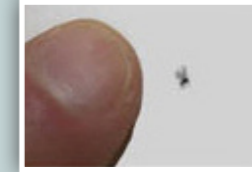


Adult mayflies have large triangular front wings with many cross veins. The wings are held upright over the thorax. They also have long filaments or 'tails' at the end of their body. Mayflies are an important source of food for trout and other game fish. At certain times of the year huge numbers may emerge simultaneously from particular bodies of water. They are attracted to lights and the resultant large swarms may alarm some people. Adult mayflies are short-lived, do not feed and survive just a couple of days.



## FUNGUS GNAT ADULTS (ANISOPODIDAE)

are common in shaded, wooded areas. Different species range in size from tiny to larger than mosquitoes. Under a magnifying glass, most species can be seen to have prominent spines on their legs which are absent in mosquitoes. They lack a biting proboscis and their wings don't have scales.



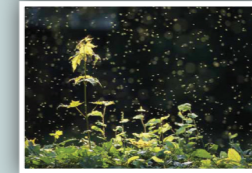
They are found in foliage in or near damp places and are sometimes seen in small swarms. They are attracted to lights, sometimes in large numbers, and can be found indoors, particularly in house plants that are overwatered and/or have poor drainage. The larvae feed on fungi and mold in the soil. Adults are harmless and cannot bite.



Photo by André Kanwath

## DANCE FLIES (EMPIDIDAE)

are gnat-like insects that are named because of their noticeable vertical movement or 'dancing' behavior. These 'dancing' swarms consist mostly of males who are competing to mate with passing females. They are generally larger and heavier bodied (more fly-like) than mosquitoes.



Spring swarms are seen in open, sunny places like clearings in the woods. They prey on other insects including mosquitoes and are therefore considered beneficial insects.