- **Physical Control**- Drain cleaning and other habitat modification projects reduce or eliminate mosquito breeding.
- **Biological Control**- The mosquito-eating fish *Gambusia affinis* is planted in many impoundments and waterways. A single fish may consume over a hundred mosquito larvae in one day.
- **Chemical Applications**- "Soft pesticides" are applied which control only mosquito larvae and leave non-target organisms unaffected.

The Districts aim is to control this mosquito (along with other species) when it is confined to the water as larvae. Controlling the flying adults would be ineffective and costly since they are dispersed throughout a larger geographical area.

What You Can Do

On warm, sunny days, only screened windows and doors should be opened. Keep screens in good repair. If mosquitoes do get inside your house, they may be found resting on walls, under sinks, in closets, etc. Use a commercial insect spray and/or or swat them dead. Personal application of an insect repellent can provide relief. To make sure you are not breeding mosquitoes, empty or change containers holding water weekly, clean drainage courses to ensure moving water, and stock impoundments with mosquito-eating fish.

Follow label directions on any commercial pesticides carefully.

For more information contact:

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The Overwintering Mosquito

Anopheles freeborni

This over-wintering pest is a fairly large, brown mosquito with long legs and dark spots on each wing. It is a vicious biter and enters houses readily. This mosquito is found throughout most of California and is a severe pest in rice growing areas. Anopheles freeborni was involved in the malaria epidemics during the late 1800's and early 1900's in northern California.

The Facts:

While cold winter weather kills most kinds of adult mosquitoes, the adult female Anopheles freeborni

hibernates during these months.

Shasta Mosquito and Vector Control Biologist John Albright aspirating for *Anopheles freeborni* in a culvert.

In the fall these mosquitoes disperse several miles from their breeding sources to seek shelter in protected places, such as attics and outbuildings. They are often a nuisance at this time.
A warming trend in January or February sounds a wake-up-call to these mosquitoes. They are extremely hungry and are looking for a blood meal that will nourish their developing eggs. Biting females are most bothersome during the afternoons and early evenings. Fortunately, the problem usually lasts a few weeks.

Where They Breed:

Anopheles freeborni prefer standing water that is open and sunlit with vegetation and algae present. Such sources include creek isolations, ponds, swampy areas, stream edges, and drain courses.

Mosquito Life Cycle

The development time from egg to adult requires approximately three weeks.

Eggs

Unlike most other types of mosquitoes eggs are laid singly on the surface of calm water. After a day or so the eggs hatch into larvae.

Larva

The larva or "wiggler" comes to the surface to breathe through a pair of openings called spiracles. Unlike other mosquito larva, Anopheles lie horizontally just below the surface of the water. During this stage, the mosquito sheds its skin four times. After only a few days the larva becomes a pupa.

Pupa

The pupa now breathes through two tubes on its back. The mosquito grows inside the pupa and in a few days it splits the pupal skin and emerges as an adult.

Adult

The newly emerged adult rests on the surface of the water until it is strong enough to fly away for something to eat. If it is a female she will require a blood meal before she can lay her eggs.

Control

The Shasta Mosquito and Vector Control District employs a comprehensive control program that involves a variety of carefully planned methods to control mosquito populations.