

A Brief Update on the Aquatic Insect Sampling Efforts at Sausal Creek

by Emma Brown, Aquatic Insect Monitoring Coordinator, 9/18/02

The Friends of Sausal Creek Aquatic Insect Monitoring Team has been monitoring the health of Sausal Creek since early 1998. Visits to the creek to look at the stream insects occur nearly every month. The team alternates between two sites: one at Dimond Park, above El Centro, and one at Palo Seco, an upstream tributary of Sausal Creek. Palo Seco serves as the reference site for the quality of habitat deemed possible and desirable for the Dimond Park site.

It should be noted that our data for this year is fairly limited, due to some equipment problems that were not resolved until March and a couple of rain storms that drowned-out our field work. Therefore, I have narrowed this review to the conditions found during the months of April through August (Note: sampling efforts for 2001 were terminated in June because of the channel restoration project and the Team did not return to the creek until April 2002).

The purpose of monitoring aquatic insects is to determine the overall health of a stream by looking at the organisms that live within it. For the most part, this means we are looking at insect larva. The most desirable insects would be those that represent fish food. Once the stream can support fish, we have a much healthier stream. The insects we would like to find come from three Insect Orders: Mayfly, Stonefly, and Caddisfly. Within each Order are a number of Families of insects, which have been graded for their pollution tolerance. Through the years, insect groups that have a high-to-medium tolerance to pollution dominate our samples. That level of dominance has ranged from 30% to 77%. This year, the April data indicates that the most common pollution-tolerant insect, the midge, makes up 84% of the stream biota. However, it may be comforting to know that the midge numbers are typically overtaken by the Mayfly population (the ever-present Baetid, or minnow Mayfly) two months later. The Baetid Mayfly and the midge occupy similar functions within the stream, i.e. what and how they eat, and so we may be observing the effects of habitat competition between the two organisms. Although it is included within the Mayfly Order, the Baetid is considered a fairly pollution-tolerant family of insects, so there is not any truly scientific reason to cheer "hooray" when these mayflies dominate the sample. However, we (the Team) are more emotionally attached to the Baetid, because it is a prettier and more dynamic insect than the lowly midge (a worm-like insect).

The Taxa Richness, the number of Families represented in each sample, has held fairly steady at the Dimond Park site.

We find eight to thirteen Families may be represented in any one sample. When we compare this with the range of ten to nineteen families that we may find at the Palo Seco site, it is clear to see that Sausal Creek does not provide the variety of habitat required to support a wide range of organisms.

Another element worth analyzing in our data, is the abundance factor. We generally find anywhere from 250 to 350 insects with each sample taken at from the Dimond Park Site. The numbers grow considerably when there is a "bloom" of midges or black flies; this generally happens when the weather has been very warm. At Palo Seco, the insects may number from 125 to 250 and there have not been any "blooms" of midges or other pollution-tolerant insects. A greater number of insects is typically considered a good indicator of stream health, but California streams are seasonal (they tend to dry-up) and Palo Seco is a small stream, so these two factors may limit the population numbers at the reference site.

I would like to remind everyone that Sausal Creek has experienced a number of "events", which have significantly affected its physical and ecological features. There have been a series of heavy winter storms that have felled trees, eroded banks, and filled the stream with sediment. These storms have also scoured the streambed of precious rock, leaving little but fine sands behind. The sewer pipe replacement project kept the stream dry in our sampling site for a couple of months (although we do seem to have more water in the channel since the completion of this project). Even the channel restoration project of 2001, with all of the clearing of vegetative cover (especially trees), the digging and widening of the channel, the supply of new rock, etc. has kept the stream in a constant state of change. Such dynamic habitat makes it difficult for many insects to settle and survive in the stream; only the hardiest and those with the shortest life spans in the water will remain. Opportunistic insects, such as the midges and other nuisance flies will probably do well at Sausal. Increased sunlight in the channel is already prompting a strong presence of algae in the stream, which chokes-off the interstitial crevices that stream insects rely on. However, the new channel has demonstrated its ability to withstand strong winter storms and the newly planted vegetation is holding steady. If the habitat is good, the insects will find it. But, it may take a few years before we begin to see a trend in what this stream can provide for insects and fish.