

Today at the Clavey River, just above the confluence with the Tuolumne, we found huge masses of blackfly larvae in the genus *Simulium*. They formed particularly dense colonies at the mouths of small waterfalls where water was rushing the fastest. Their presence at these locations raises some interesting questions.

There were hundreds closely stacked together. I'm curious just how natural a population of this density would be to this area. Adult Female Simuliids generally require a blood meal to reproduce. Seeing as there is a camp ground right next to this location that's probably used about five days out of the week, I'm curious if human presence might actually be promoting their numbers by providing a source of blood meals. My only skepticism of this notion however, is that no one at camp complained of bug bites of any variety. I can personally attest that I was not bitten, despite the fact that I'm usually the person who gets eaten alive by insects. However, this could just as easily be explained by seasonality. Perhaps adult Simuliids of this variety only emerge at a specific time of the year to wreak havoc on mammal populations in the area.

Still, their location in the water column also raises some eyebrows. What exactly drives them to fasten at the mouths of small waterfalls? Simuliids are well adapted clingers because they use silk lines to fasten themselves to the substrate and have comb-like structures to filter out FPOM in the water. So perhaps they are fit for this niche in fast flowing water. But is that really the full picture? What is the mechanism that keeps them in that niche? Is it that they escape competition with other FPOM feeders? Or perhaps is it that they are better able to filter FPOM from the water because there is more water moving through this part of the water column at any given moment? Or maybe this position in fast flowing water allows them to escape predation due to the technical difficulties of feeding at high flows. Otherwise, I would imagine a Sacramento Sucker would go to town on these colonies.

So which, if any, of these factors is most important for this niche partitioning? I suppose an experimental design would be best suited to answering this question. We could set up predator exclusion areas to see if black fly larvae will colonize other parts of the water column as well. Similarly we could exclude other potential insect competitors to test for the effect of competition on their placement. And lastly we could filter out FPOM from certain areas in the water column to see if nutrient concentration plays a role in colonization patterns of blackfly larvae. Lastly, we could try setting up various combinations of these treatments to try to understand how these factors might interact. I think it could be a fun project