



Wildlife Survey & Photo Service

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REPORT No: 3480

(Clean Water - Epeorus)

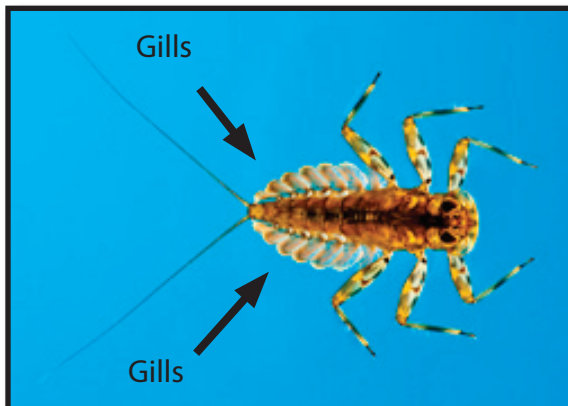
April 27, 2010

To: Rich Marovich
Chris Lee

Subject: Clean Water Invertebrates - Significant
Change in Putah Creek (IDR)



Epeorus albertae nymphs are hydrodynamically shaped to withstand swift water.



The nymphs have large, flat gills on both sides of their abdomen. The enlarged surface area provided by the sensitive gills is a primary reason they prefer cool, pollution-free water.



Gill enlargement from above image: Gill structure shows tracheal extensions that helps nymphs absorb dissolved oxygen and function in ion exchange.

Background:

Dramatic changes in the composition of aquatic invertebrate communities can alert water managers to changes in water quality. The power of such changes depends on the species involved, the number of individuals in the change, temporal longevity, and if the population is successfully repopulating.

Changes in Invertebrate Community:

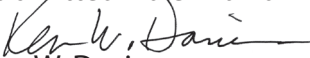
A significant change has taken place at Fishing Access No. 5 that suggests an improvement in water quality. The density of *Epeorus albertae* - a large mayfly - has dramatically increased. The change in the number of *Epeorus* at Fishing Access Number 5 is notable as we found one individual in 2008, several individuals in 2009, and 200 - 300 *Epeorus* nymphs per square meter last week. *Epeorus* are rated a "zero" on the pollution tolerance scale for aquatic invertebrates - they will not tolerate polluted water!

Discussion:

The cause of the dramatic change in the density of *Epeorus* at Fishing Access No. 5 is unknown. However, an improvement in water quality is a distinct possibility and should be considered. For example, closure of the marinas - and sewage leaks - on Lake Berryessa could certainly result in a positive response in downstream biota.

Epeorus are not impacted by the New Zealand Mudsnaill infestation as mudsnails typically exhibit a low density this time of year. *Epeorus* can be a significant source of food for native fish.

Submitted via e-mail on April 27, 2010


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