



## REPORT: 3635-22CA (Pickerel Weir Crossing)

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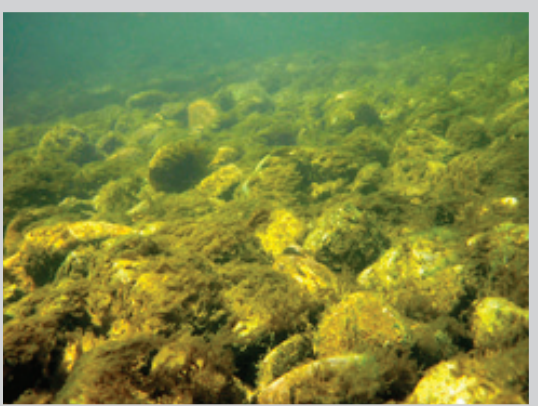
**Subject: Aquatic invertebrates colonizing the angular rocks at the Pickerel Weir Crossing.**



Pickerel Weir crossing: angular rocks used for base.



Pickerel Weir photographed upstream from crossing.



Subsurface Image: angular rocks at Pickerel Crossing



*Hydropsyche californica* larvae. Prime fish prey.

### Executive Summary

The Pickerel weir was constructed in August 2009 to improve salmonid spawning habitat. A creek crossing for the landowner and restoration crews was laid using 3-5 inch angular rock that has the tendency to lock in place making it a better choice for vehicle crossing. At the time, there was some concern that aquatic invertebrates would not colonize the angular rocks. Recent surveys have shown that the invertebrate density in the angular rocks of the crossing average 2424 aquatic invertebrates per square meter which is similar to other areas of Putah Creek in October.

### Use of Angular Rock in Putah Creek

Prior experience has shown that many aquatic invertebrates, important as prey for native fish, will colonize injected rock within days. Angular rock has the ability to lock some substrate in place where rounded cobble will relocate downstream exposing the hard undersurfaces. I think that angular rock might be valuable for use in additional crossings if needed and in areas - such as below I-505 - where the hard creek bottom allows injected cobble to easily relocate downstream.

### Initial Invertebrate Colonization:

A casual invertebrate survey on 9/4/09 determined that the angular rock above the Pickerel Weir was quickly colonized by blackfly larvae, (*Simulium sp.*) an important prey species for juvenile fish.

### Invertebrate Colonization - October 2010

The number of invertebrates (minus mudsnails) in the Pickerel Weir crossing (2216 invertebrates/sq.m) is significant when considering recent surveys at Fishing Access No. 5 (FA#5). Although the species composition is different at FA#5, the site supports similar invertebrate numbers in October with 2380 - 2862 aquatic invertebrates per square meter.



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## Discussion

Aquatic invertebrates have successfully colonized the angular rocks used for the crossing at the Pickerel Weir. Approximately 90% of the aquatic species colonizing the crossing are considered prime prey species for native fish.

Angular rock such as the material used at the Pickerel crossing should be helpful for future vehicle crossings and in limited areas where injected spawning gravel tends to quickly mobilize without forming a gravel base. Those areas quickly revert back to hard benthic surfaces which remain unusable by spawning fish.

Submitted via e-mail 10/17/10

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## AQUATIC INVERTEBRATES - PICKEREL CROSSING

Species	Total Specimens / (32.5 sq. cm) x 3	Average (3 samples)	# specimens /sq m	% Invert. Community	Comments
<b>CADDISFLIES</b>					
<i>Brachycentrus</i>	3	1	9	0.39	
<i>Glossosoma</i> (pupae)	38	12.6	119	4.92	
<i>Hydropsyche</i> (larvae)	391	130.33	1234	50.9	Disappearing in areas of high NZMS densities. Important prey species.
<i>Hydropsyche</i> (pupae)	10	3.33	32	1.32	
<i>Amiocentrus</i>	9	3	28	1.17	
<b>MAYFLIES</b>					
<i>Baetis</i>	196	65	625	25.7	
<i>Tricorythodes</i>	1	0.33	3	0.1	
<b>SNAILS</b>					
New Zealand Mudsnailes	66	22	208	8.5	
<i>Stagnicola</i>	11	3.6	34	1.4	



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<b><u>AQUATIC INVERTEBRATES - PICKEREL CROSSING - continued</u></b>					
Species	Total Specimens / (32.5 sq. cm) x 3	Average (3 samples)	# specimens /sq m	% Invert. Community	Comments
<i>Radix auricularia</i>	2	0.6	6	0.24	
<b>DIPTERA</b>					
Simulium	50	16.6	157	5.1	Important for fry
Diptera (unidentified)	4	1.33	13	0.55	New to Putah Creek.
<b>CRUSTACEANS</b>					
<i>Corophium spinecorne</i>	11	3.6	34	1.4	
<b>ALDERFLIES</b>					
<i>Sialis</i>	1	0.33	3	0.12	
<b>FLATWORMS</b>					
<i>Planaria</i>	2	0.66	6	0.24	
<b>TOTALS ALL ORGANISMS</b>	<b>795</b>	<b>265</b>	<b>2424</b>	<b>100</b>	

END