



# Buck Creek fish population and habitat analysis in preparation for the recolonization by anadromous salmonids

Brady Allen and Patrick J. Connolly

U.S. Geological Survey

Western Fisheries Research Center

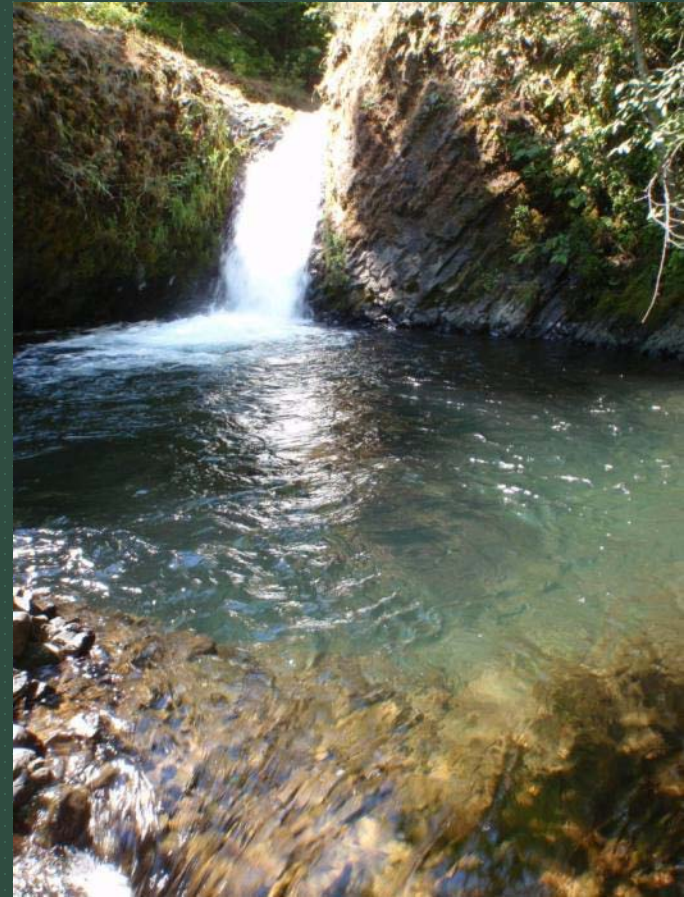
Columbia River Research Laboratory

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In collaboration with:

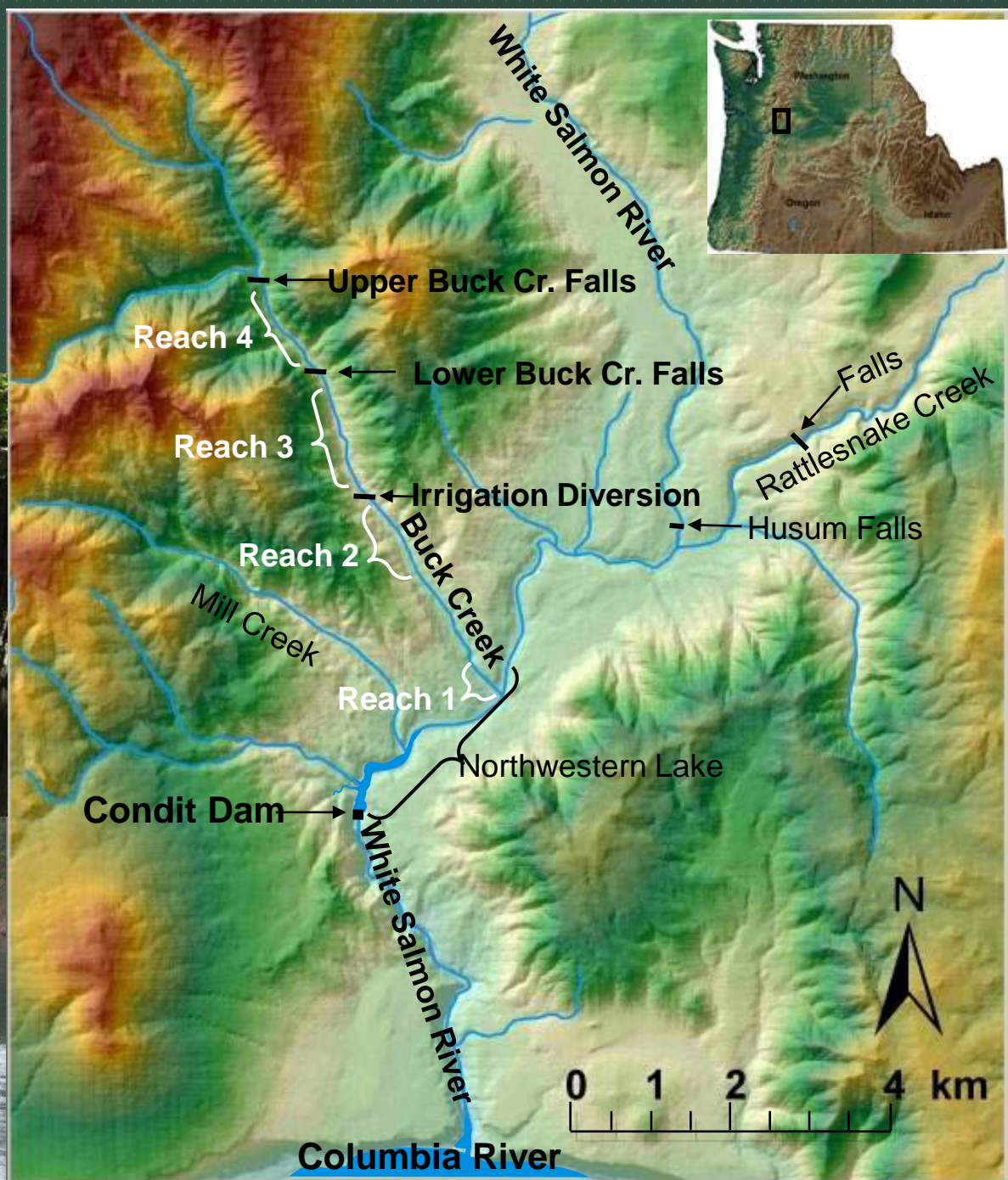


U.S. Department of the Interior  
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## Buck Cr. study reaches

- 1) Alluvial fan to Bridge (194 m)
- 2) Lower DNR boundary to irrigation diversion (1,088 m)
- 3) Irrigation diversion to lower falls (1,947 m)
- 4) Lower falls to upper falls (1,383 m)



**Goal:** to analyze physical and biotic conditions in the potentially anadromous portion of Buck Creek

1.) Gain information about abundance, productivity, life histories, diseases, and genetic composition of the existing juvenile salmonid populations in four geomorphic reaches

2.) Monitor stream temperatures and discharge, characterize stream and riparian habitat conditions, and assess stream health through macroinvertebrate species metrics



Presence and absence of fish species found in Buck Creek in 2009 and 2010.  
 P = present, A = absent.

Reach	Rainbow Trout	Eastern brook trout	Lamprey	Sculpin	Dace
1	P	P	P	P	P
2	P	A	A	P	A
3	P	A	A	P	A
4	P	A	A	P	A



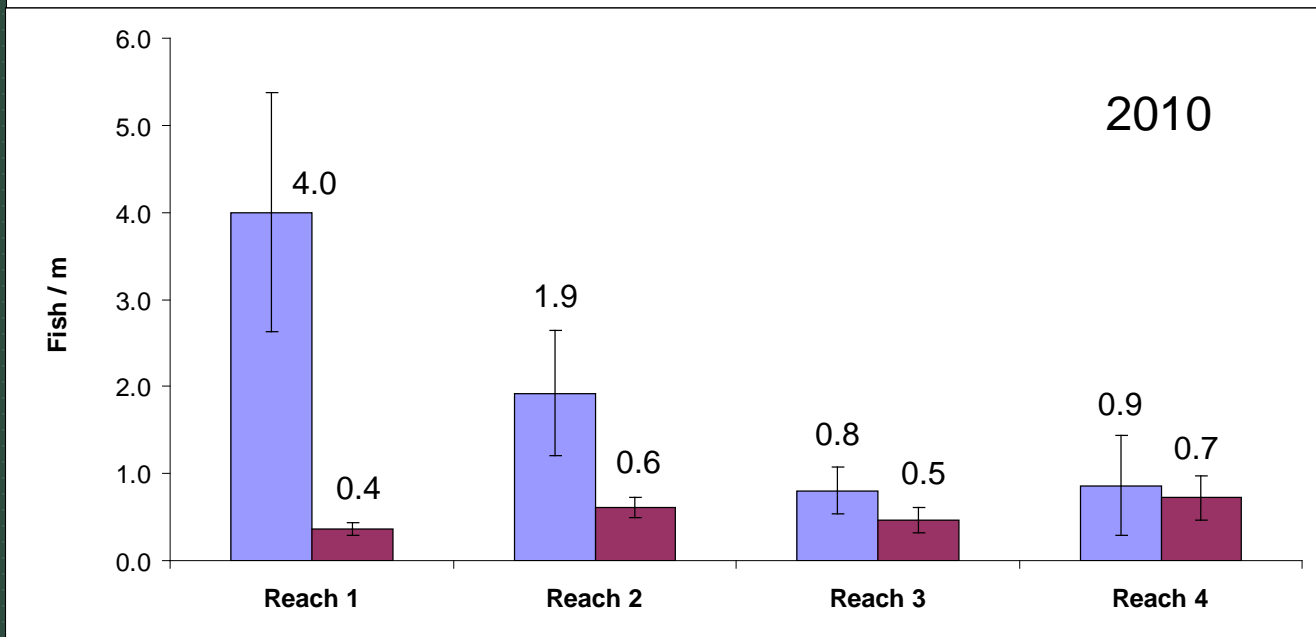
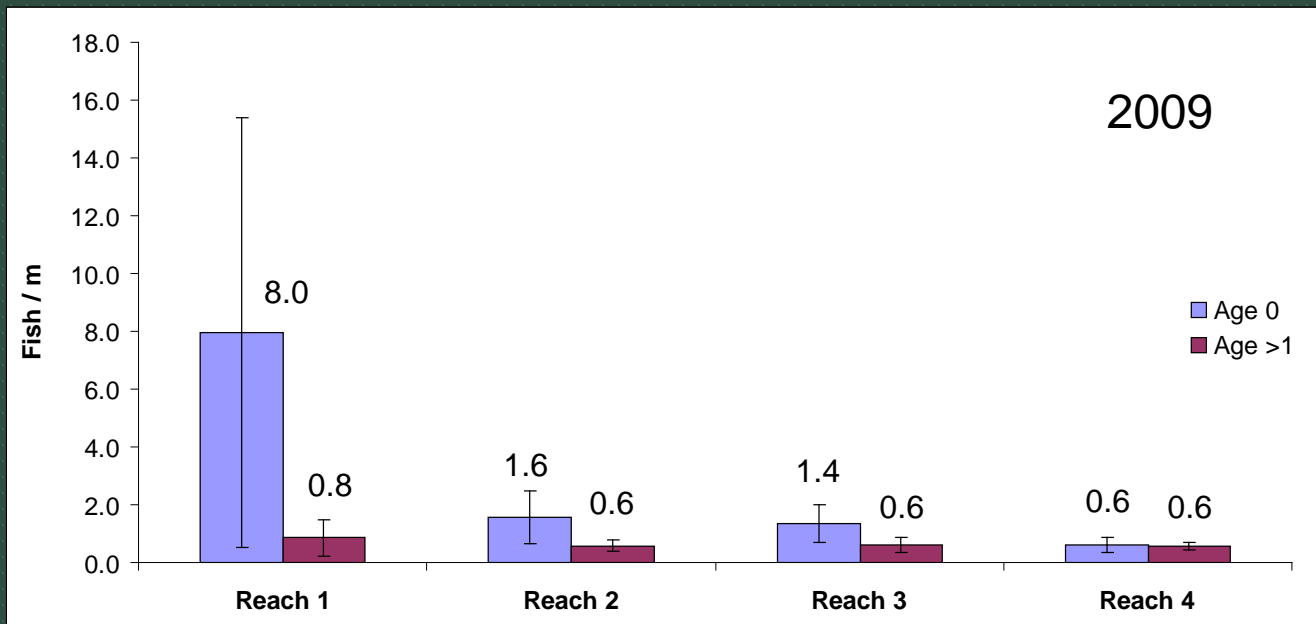


$$N = M * C / R$$

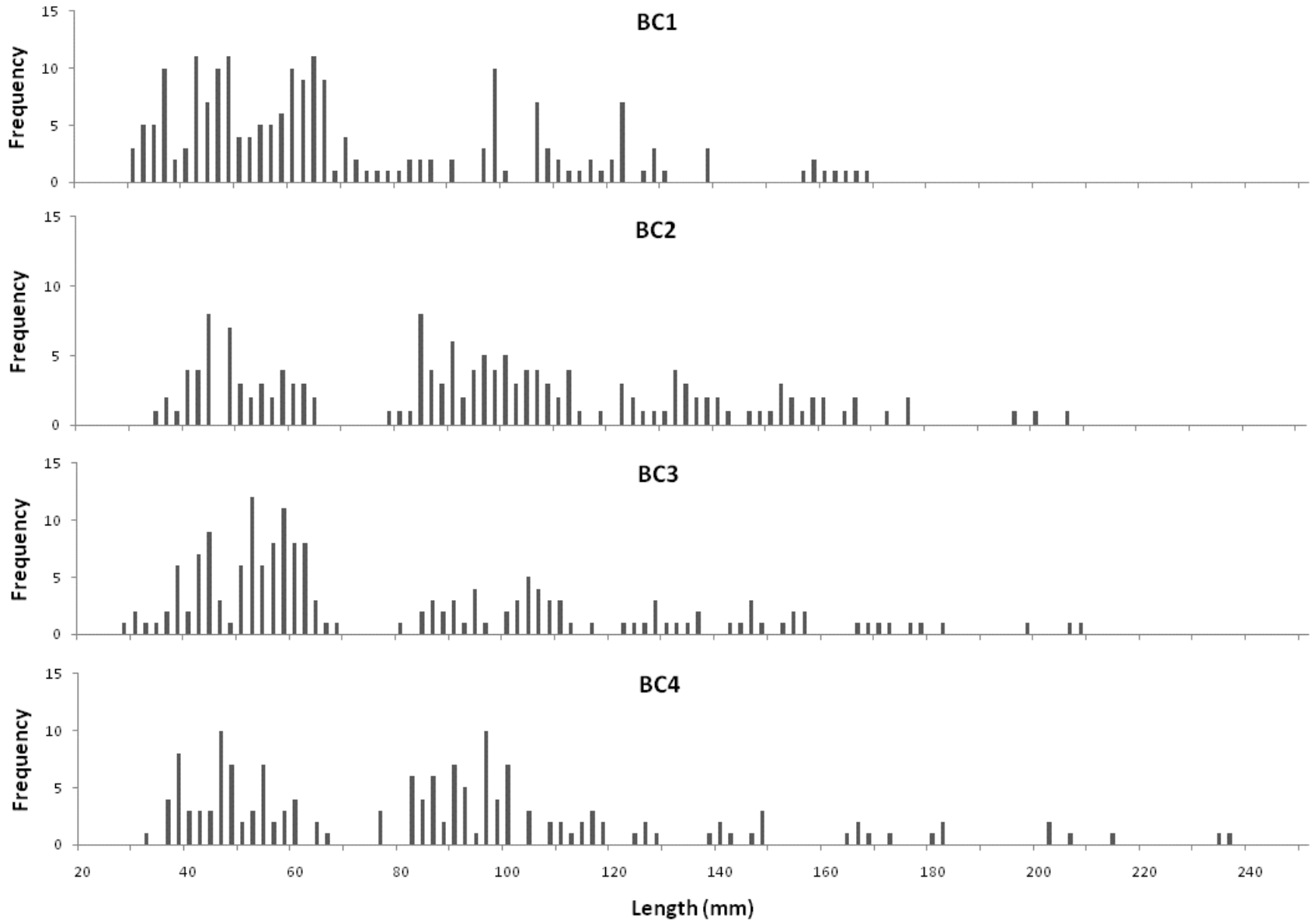


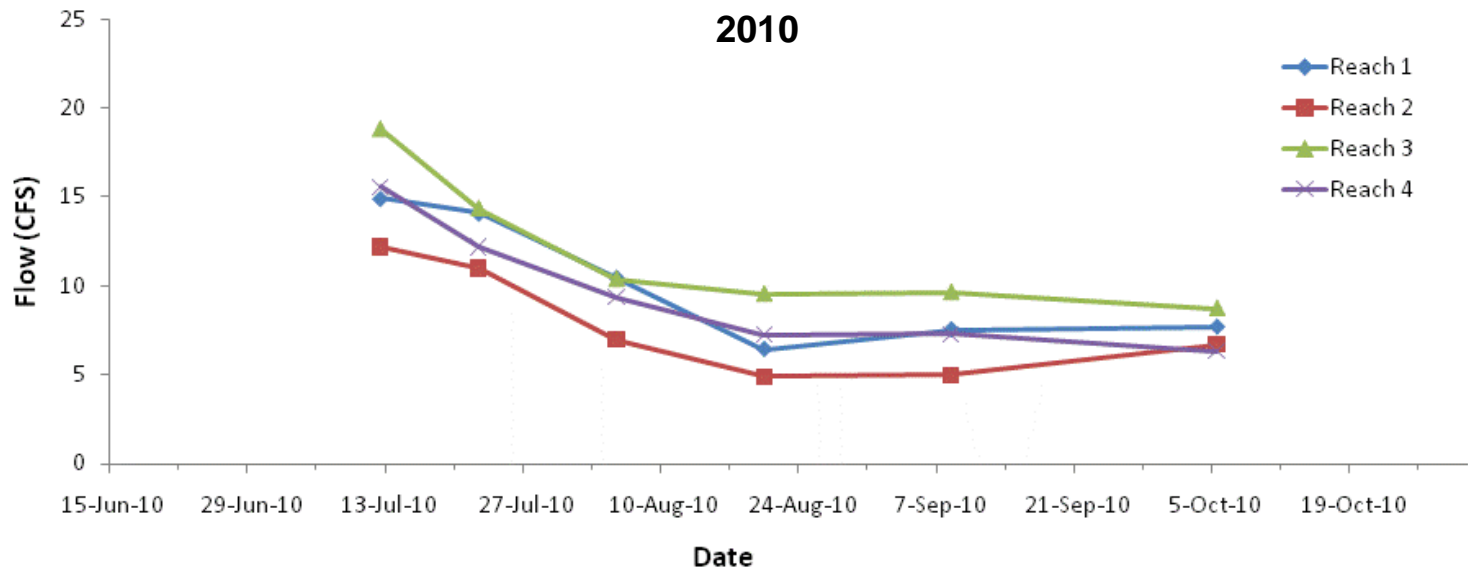
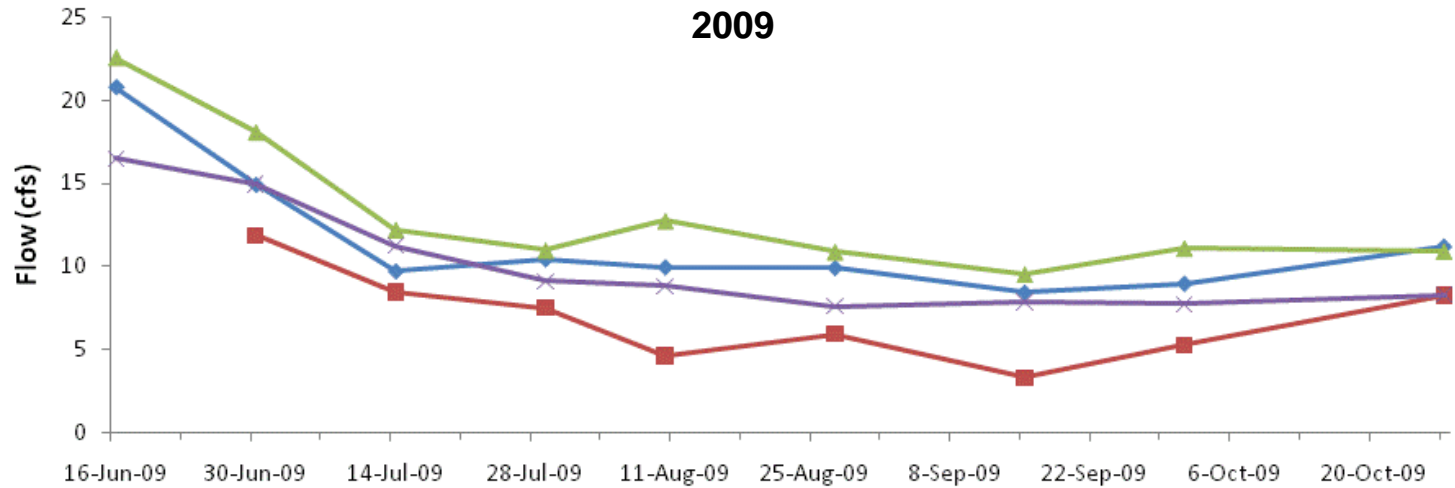
	Length sampled (m)	Age	Marked	Captured	Recaptured	Estimate
Reach 1	165	0	67	57	2	1,315
		≥1	27	19	3	140
Reach 2	508	0	56	110	7	791
		≥1	56	97	18	294
Reach 3	385	0	80	70	10	523
		≥1	62	45	11	242
Reach 4	345	0	36	62	10	212
		≥1	78	57	23	191

# Mark-recap population estimate for rainbow trout by reach



# Length frequencies by reach for 2009







## Temperature

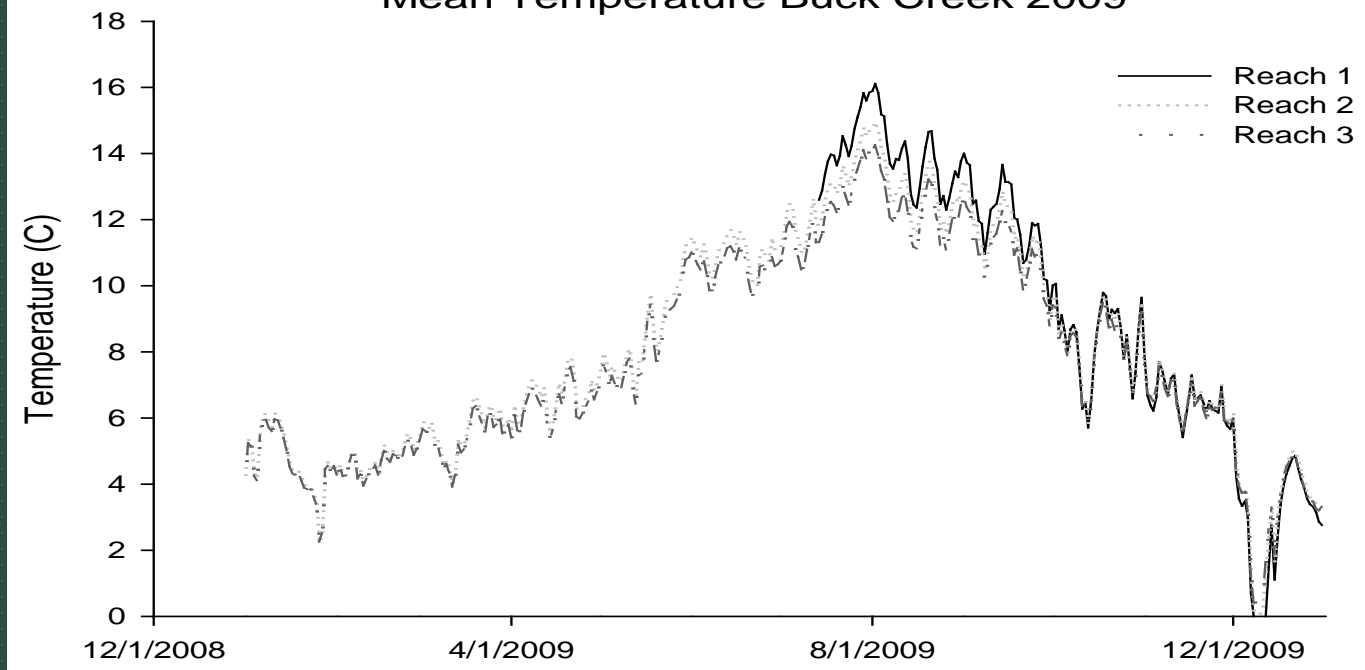
Reach 1 is warmest  
Occasionally above 16 C

Highest recorded =  
18.5 C in reach 1 in  
8/14/1998

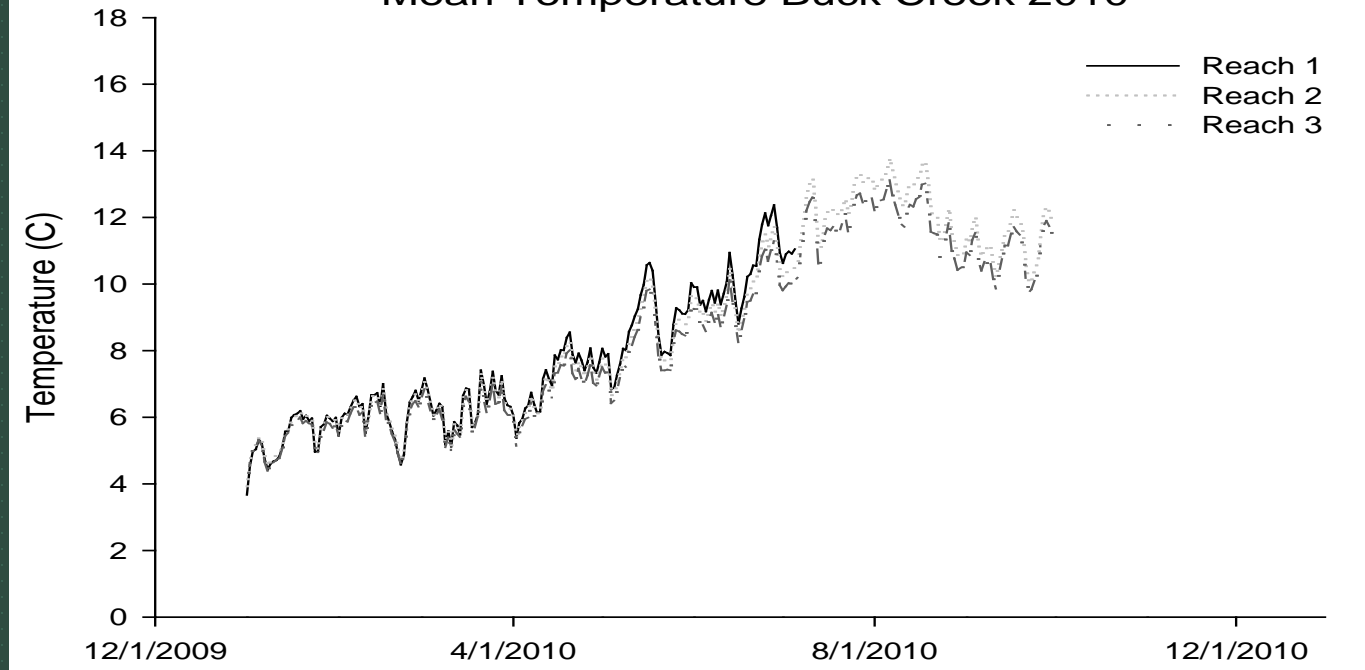
Good temperatures for  
trout



### Mean Temperature Buck Creek 2009

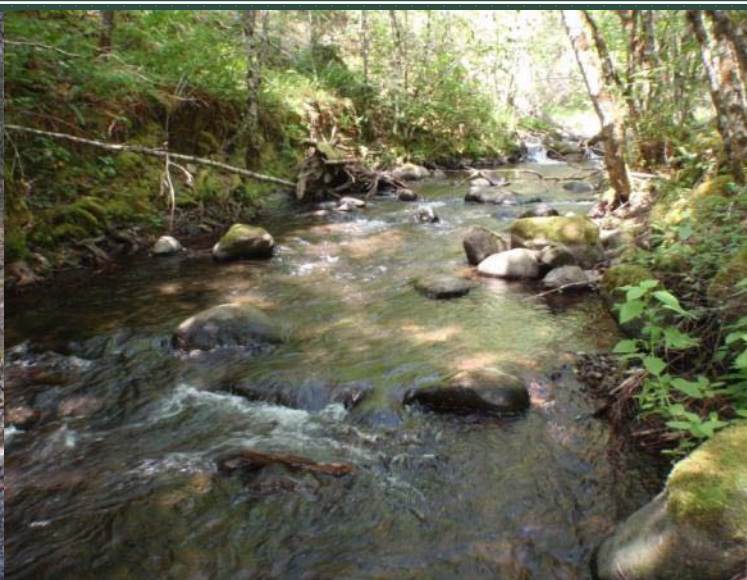


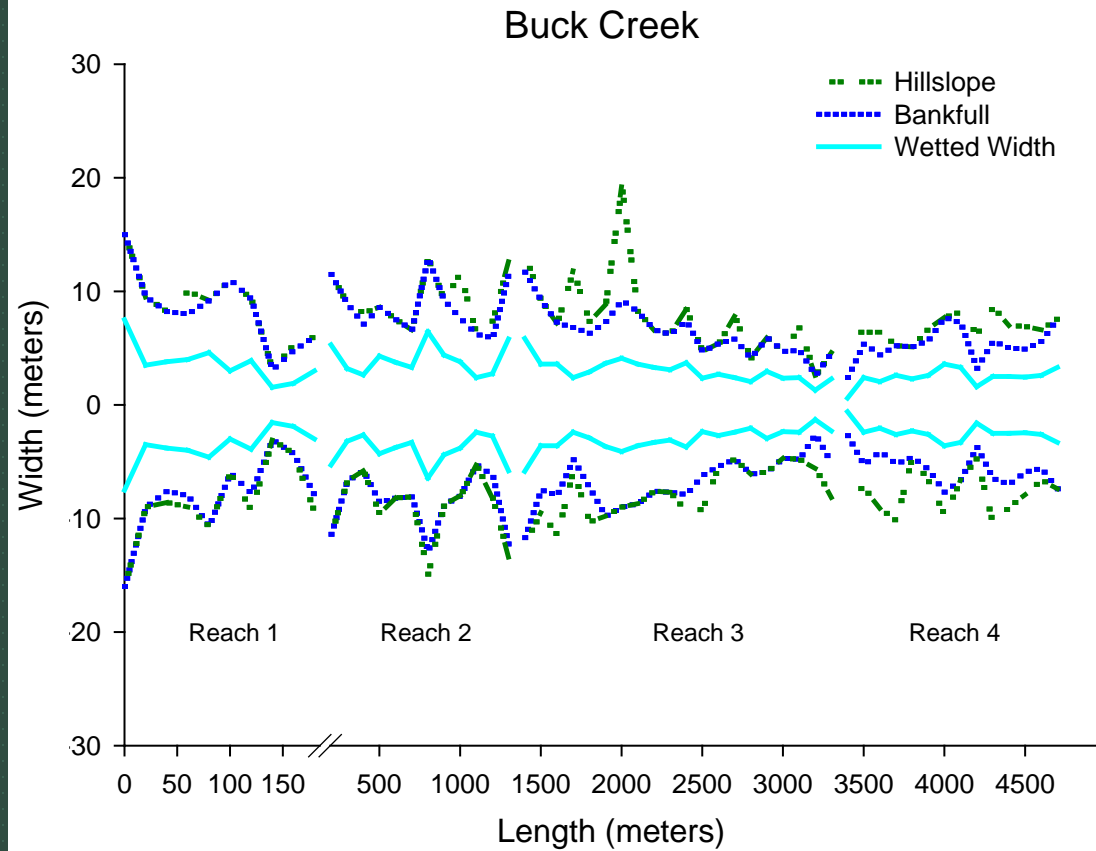
### Mean Temperature Buck Creek 2010



**Location, length, area, and percent habitat type from surveyed reaches in Buck Creek, 2010.  
Percent habitat was calculated using area.**

Reach	Start river kilometer	Total survey Length (m)	Total surface area (m <sup>2</sup> )	Gradient (%)	Habitat Type (%)				
					Glide	Pool	Large cobble riffle	Small cobble riffle	
1	0	194	1,419	1.1	15	9	54	22	
2	0.2	1,088	7,967	3.6	0	15	85	0	
3	3.1	1,947	11,335	4.0	1	14	85	0	
4	5.0	1,383	7,645	3.6	2	15	83	0	
<b>Buck Creek total</b>	<b>6.4</b>	<b>4,612</b>	<b>28,365</b>		<b>1</b>	<b>15</b>	<b>83</b>	<b>1</b>	



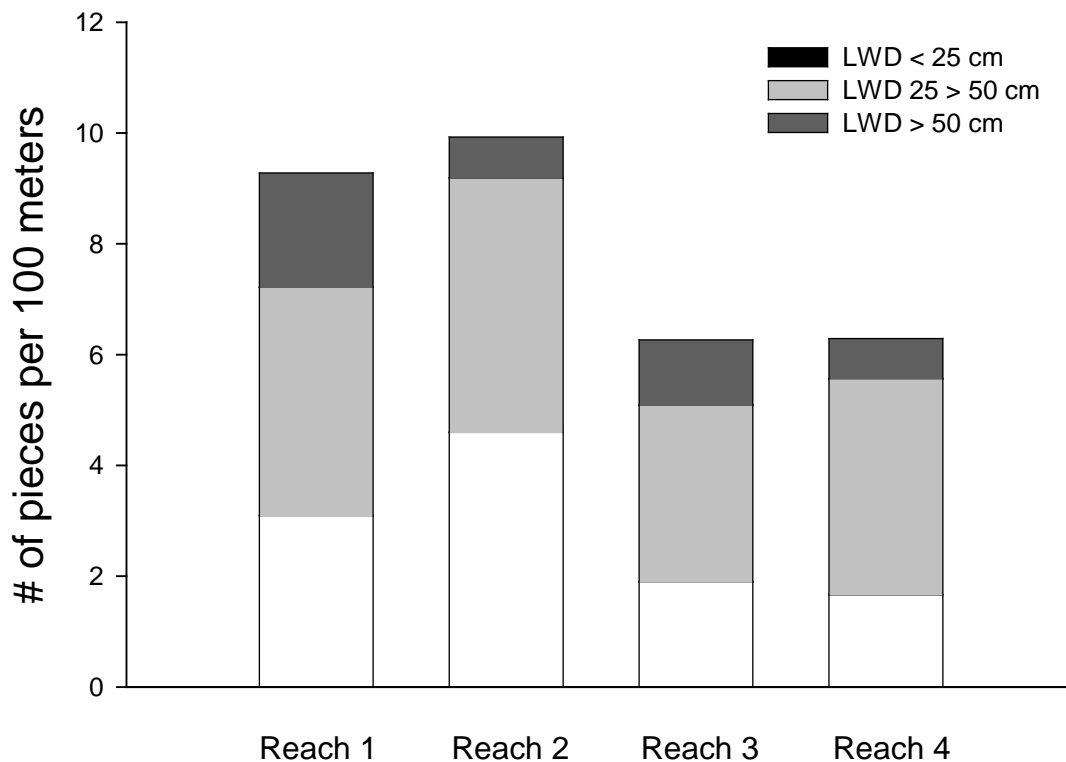
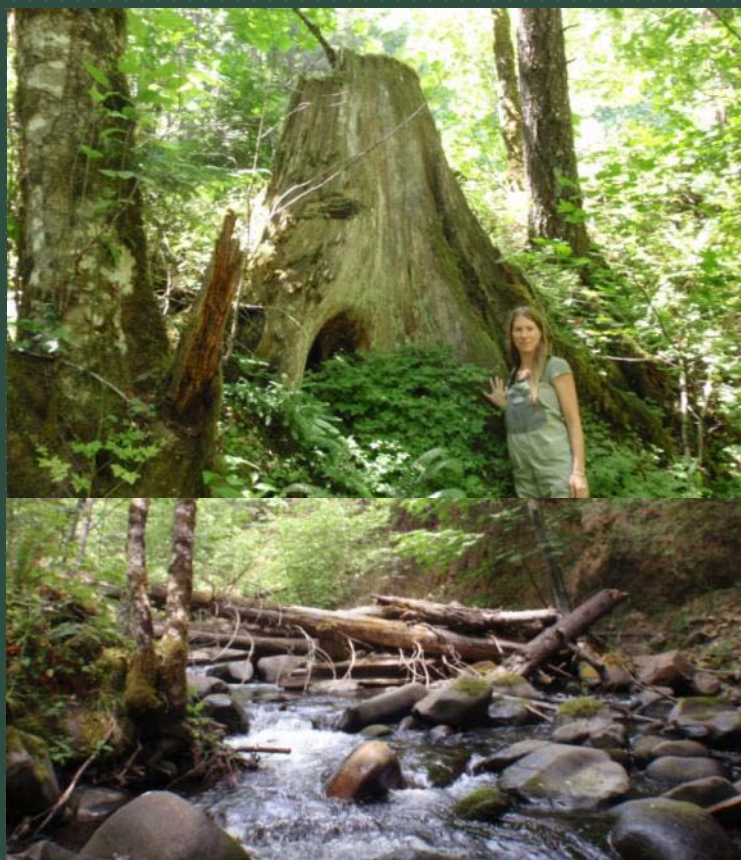


Naturally confined,  
very limited floodplain



The number, length, diameter, and function of large woody debris (LWD) found in Buck Creek in 2010.

Reach	Reach Length (m)	Large Woody Debris (LWD)				Percent of unstable LWD	Percent of sediment-storing LWD	Percent of pool-forming LWD	Number of Log Jams
		Total Number	Number/100m	Mean Length (m)	Mean diameter (cm)				
1	194	18	9	6.17	38	39	0	0	1
2	1088	108	10	6.73	34	28	41	2	4
3	1947	122	6	6.77	39	54	25	12	1
4	1383	87	6	5.12	36	46	6	0	4



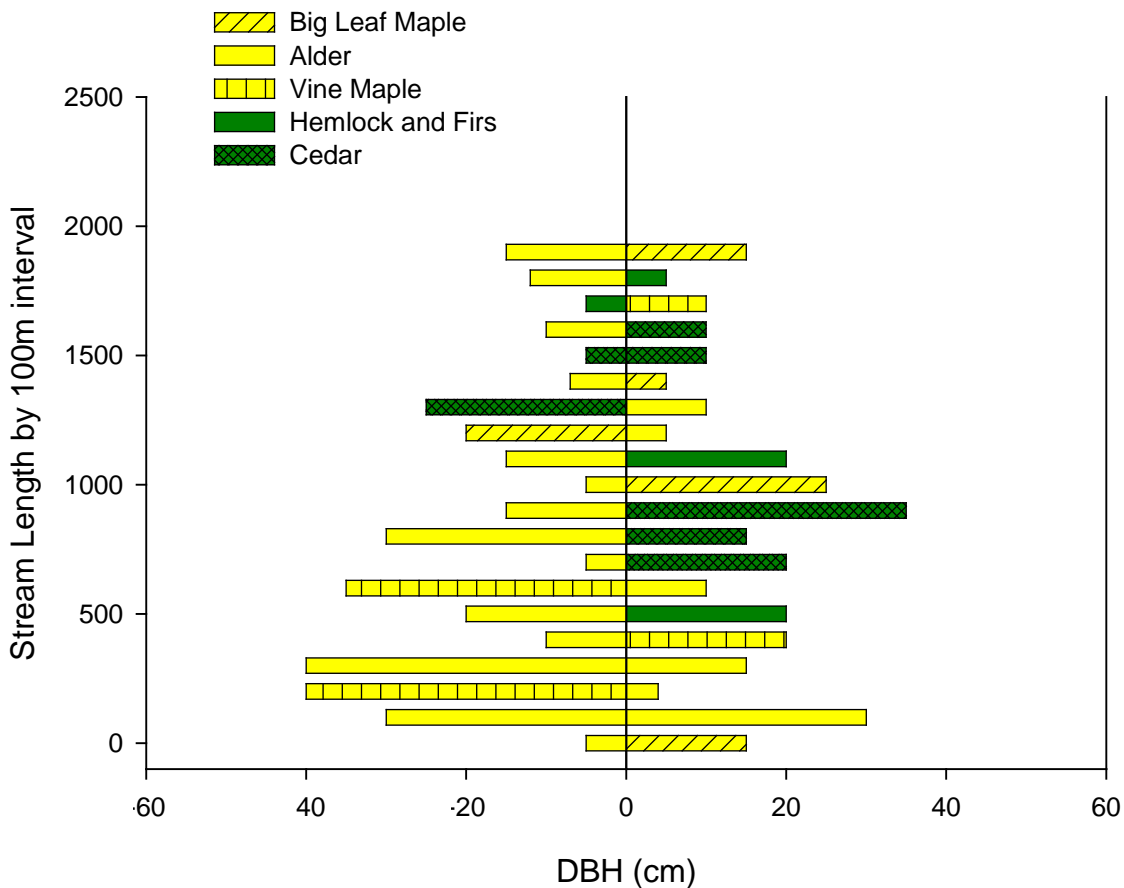


Adjacent riparian typically small diameter hardwood

Evidence of historic large conifer removal in riparian area



Reach 3



## Preliminary Summary

Large cobble riffle dominates, pools were simple and shallow, formed by bedrock

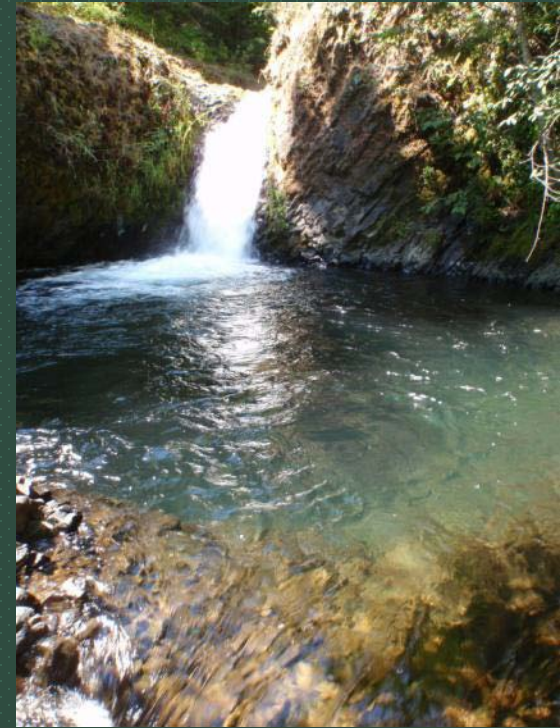
LWD moderately low, future LWD recruitment reduced but improving

Little gravel for spawning

Good riparian shading

Good temperatures for trout

Trout population robust





← **Now.**

**Future?**

