

Oregon Hatchery Research Center

Oregon State University
Oregon State Fish & Wildlife



West of Corvallis, Oregon
Alsea River Basin

Dr. David Noakes - Director



Oregon Hatchery Research Center

Examine Various Biological and Ecological
Aspects of Hatchery vs Wild Trout



Oregon Hatchery Research Center



Stream Channels



Research Question

Is spawning behavior and egg hatch success the same among Wild and Hatchery-raised Salmonids



October 2005

Research Question

Is the Diet and Growth
of Wild and Hatchery Salmonids
The Same?



Research Question

Is the benthic community composition similar throughout the channels and similar to that in Fall Creek



October 2005 - June 2006

Study Design



Channels functional in October 2005 after main emergence of insects.

Drift main source of benthos to river and channels

Shade cloth to mimic leaf out added over 2 channels in May

Steelhead hatched in last week of May (hatchery, wild).

Sampling Design

Surber samples collected mid June

Stream Channels:

- 2 samples per riffle
- 3 riffles per channel

Fall Creek:

- 2 samples per riffle
- 3 riffles per stretch



Sample Analysis

- Benthos identified to lowest level (genus/species)
- Reported to family in this presentation



Biological Gradient



downstream



upstream

Observations



Shaded Channel

	upper	mid	lower
Baetidae	240	470	18
Heptageniidae	95	39	13
Leptophlebiidae	20	11	15
Ephemerellidae	13	7	2
Ameletidae	6	-	3
Nemouridae	48	32	30
Perlidae	12	4	7
Perlodidae	7	3	2
Chloroperlidae	2	-	-
Philopotamidae	2	25	-
Rhyacophilidae	1	2	-
Limnephilidae	-	-	-
Hydroptilidae	-	-	6
Elmidae	15	7	23
Chironomidae	520	1000	860
Simuliidae	120	650	11
Total	1100	2300	990

Shaded Channel

	upper	mid	lower
Baetidae	240	470	18
Heptageniidae	95	39	13
Leptophlebiidae	20	11	15
Ephemerellidae	13	7	2
Ameletidae	6	-	3
Nemouridae	48	32	30
Perlidae	12	4	7
Perlodidae	7	3	2
Chloroperlidae	2	-	-
Philopotamidae	2	25	-
Rhyacophilidae	1	2	-
Limnephilidae	-	-	-
Hydroptilidae	-	-	6
Elmidae	15	7	23
Chironomidae	520	1000	860
Simuliidae	120	650	11

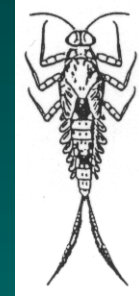
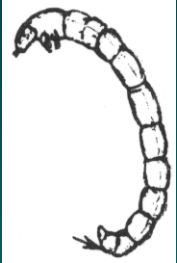
Total 1100 2300 990

Open Channel

	upper	mid	lower
Baetidae	330	490	110
Heptageniidae	93	29	8
Leptophlebiidae	8	3	1
Ephemerellidae	13	7	2
Ameletidae	2	-	-
Nemouridae	12	14	13
Perlidae	9	2	1
Perlodidae	2	1	1
Chloroperlidae	-	-	-
Philopotamidae	22	2	-
Rhyacophilidae	3	6	-
Limnephilidae	-	-	-
Hydroptilidae	-	-	6
Elmidae	7	3	-
Chironomidae	300	410	1500
Simuliidae	140	1000	31

Total 940 2000 1600⁴

Biological Gradient



downstream



upstream

Shaded Channel

	upper	mid	lower
Baetidae	240	470	18
Heptageniidae	95	39	13
Leptophlebiidae	20	11	15
Ephemerellidae	13	7	2
Ameletidae	6	-	3
Nemouridae	48	32	30
Perlidae	12	4	7
Perlodidae	7	3	2
Chloroperlidae	2	-	-
Philopotamidae	2	25	-
Rhyacophilidae	1	2	-
Limnephilidae	-	-	-
Hydroptilidae	-	-	6
Elmidae	15	7	23
Chironomidae	520	1000	860
Simuliidae	120	650	11

Total 1100 2300 990

Fall Creek

	upper	mid	lower
Baetidae	160	150	10
Heptageniidae	49	11	8
Leptophlebiidae	5	-	1
Ephemerellidae	20	6	7
Ameletidae	-	-	-
Nemouridae	14	14	7
Perlidae	60	40	41
Perlodidae	-	-	-
Chloroperlidae	6	7	6
Philopotamidae	2	6	1
Rhyacophilidae	8	5	4
Limnephilidae	1	6	9
Hydroptilidae	-	2	-
Elmidae	27	9	42
Chironomidae	130	47	34
Simuliidae	3	6	6

Total 490 320 180¹⁶

Drift



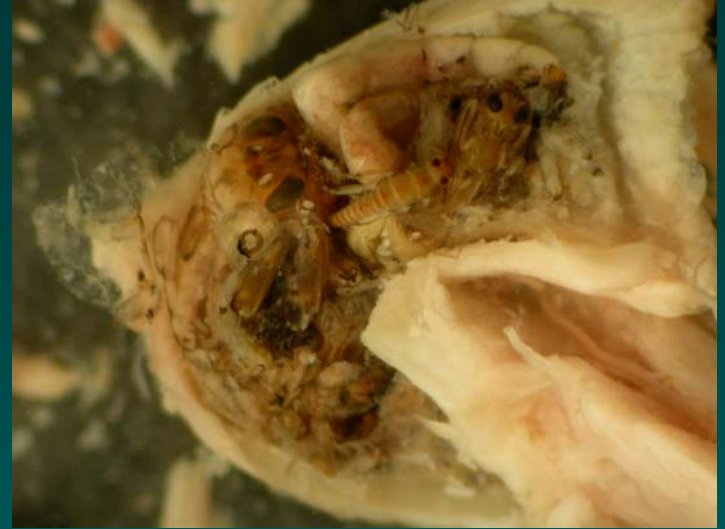
Coho Weight (g)

	Chan-D	Chan-B	Fall Cr.
<u>Location</u>			
Upper pool	1.5	1.2	0.9 - 1.6
Lower pool	1.1	0.8	



Coho Diet

(numbers per stomach)



	Fish 1	Fish 2	Fish 3
Chironomidae pupa	54	3	7
Orthocladiinae	0	2	14
Tanytarsini	0	4	29
Baetis	0	1	7
Acentrella	0	0	5
Paraleptophlebia	1	3	0
Ephemerellidae	0	1	0
True Flies	3	0	8

adult	<u>Riffle Beetle</u> <i>Stenelmis crenata</i> larva note plate behind legs	<u>Diving Beetle</u> <i>Heterosternuta</i> note longitudinal banding pattern on elytra
<u>Waterpenny</u> <i>Psephenus herricki</i> dorsal ventral head legs gills		1st gill double banded tail <u>Minnow Mayfly</u> <i>Procladius</i>
lateral 7th gill filamentous ventral <u>Flat-headed Mayfly</u> <i>Stenacron interpunctatum</i>		<u>Directions</u> 1. Disturb a 1x1 m area of cobble & gravel with feet, while sweeping through the water with a fine mesh net. Dump invertebrates into bucket. 2. Examine collected invertebrates for species on this sheet. Count the number of top ten species found. Direct your results or questions to www.georgianbay.ca/gbafoundation This water quality assessment program is jointly funded by The Township of Georgian Bay, The District of Muskoka and the Greater Bay Area Foundation.

Research Topics

- Riparian Vegetation
- Storm Pulses
- Tributary effects



Thank you