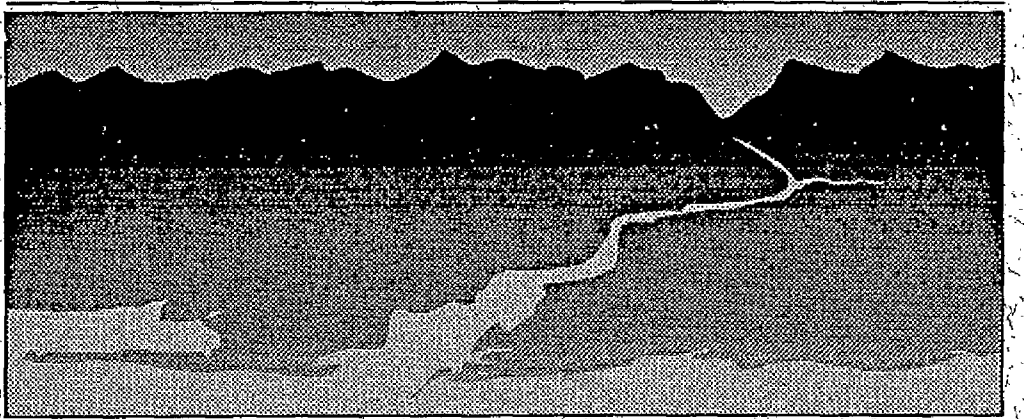
LOWER COLUMBIA RIVER



BI-STATE PROGRAM

RECONNAISSANCE SURVEY OF THE LOWER COLUMBIA RIVER

LABORATORY DATA REPORT
VOLUME 5: BENTHIC INVERTEBRATE DATA

AUGUST 1992

Prepared By:

TETRA TECH

In Association With:

EVS CONSULTANTS

TETRA TECH

VOLUME 5

BENTHIC INVERTEBRATE DATA

SECTION A. SUMMARY TABLES AND NOTES

SECTION B. POLYCHAETE DATA SHEETS

SECTION C. NEMATODE DATA SHEETS

SECTION D. CRUSTACEA DATA SHEETS

SECTION E. INSECT DATA SHEETS

SECTION F. MOLLUSC DATA SHEETS

SECTION G. TAXONOMIC GROUP COUNTS

SECTION A. SUMMARY TABLES AND NOTES

Columbia River Benthos-October 1991
Aquatic Biology Associates for EVS Consultants

	Oct. 14	Oct.3	Oct. 1	Sept 30	Sept 29	Oct. 7	Sept 28	Oct. 7	Oct. 6	Sept. 25
	E6B01	E7B02	E8B02	E9B02	E10B02	D11B02	E11B01	D12B03	D13B01	E13B03
Hydra	0	0	0	0	0	0	0	0	0	0
Tardigrada	0	0	0	0	0	0	0	0	0	0
Unknown vermiform	1	0	27	0	0	1	3	17	0	0
Turbellaria	0	0	0	0	0	0	0	0	0	0
Nematoda	10	0	48	5	3	780	277	203	0	2
Oligochaeta	8	2	62	828	12	3607	365	1354	278	0
Hirudinea	0	0	0	0	0	0	0	3	0	0
Polychaeta	0	0	0	0	0	2	1	0	7	0
Copepoda	2	0	35	1	4	11	0	13	0	9
Cladocera	0	0	29	0	2	7	0	0	0	9
Ostracoda	0	0	10	0	0	68	10	25	4	0
Corophium	120	3	251	1	0	36	22	0	144	0
Gammaridae	0	0	0	0	1	12	0	0	0	0
Asellidae	0	0	0	0	0	0	0	1	0	0
Mysidae	0	0	0	0	0	0	0	0	0	0
*Pelecypoda	3	4	1	0	1	273	37	0	22	0
Anodonta wahlametensis	0	0	0	0	0	0	0	0	0	0
Juga	0	0	0	0	0	1	0	0	1	0
Fluminicola nuttalliana	0	0	0	0	0	0	0	0	25	0
Fluminicola virens	0	0	0	0	0	3	0	0	0	0
Vorticifex effusus	0	0	0	0	0	0	0	0	0	0
Acari	0	0	0	0	0	4	0	3	0	0
Gomphidae-early instar	0	0	0	3	0	1	0	0	0	0
Baetidae-early instar	0	0	0	0	2	0	0	0	0	0
Hexagenia	0	0	0	3	0	1	4	5	5	0
Heptageniidae-early instar	0	0	0	0	3	0	0	0	0	0
Stenonema	0	0	0	0	0	0	0	0	0	0
Hydropsychinae	0	0	0	0	0	0	0	0	0	0
Oecetis	0	0	0	0	0	0	0	3	0	0
Neureclipsis	0	0	0	0	0	0	0	0	0	0
Sialis	0	0	0	0	0	0	0	1	0	0
Ceratopogonidae	7	0	46	1	2	15	0	8	0	28
Chironomidae-pupae	0	0	0	0	0	10	0	2	3	0
Chironomini-early instar	0	0	0	8	18	0	0	0	0	0
Chironomus	0	0	0	2	0	132	7	11	11	0
Cryptochironomus	0	7	7	2	2	97	3	30	5	0
Glypotendipes	0	0	0	0	0	5	0	0	0	0
Orthocladinae-early instar	0	0	0	0	8	0	0	0	0	0
Paracladius	0	0	0	0	0	5	0	0	0	0
Paratanytarsus	0	0	0	0	0	0	0	0	0	0
Procladius	0	0	0	0	0	9	2	21	0	0
Robackia	0	0	0	0	0	0	0	0	0	0
Stictochironomus	1	37	0	0	0	23	1	1	0	0
Tanytarsus	0	0	1	0	0	5	0	5	1	0
?eel larvae	0	0	0	0	0	0	0	0	0	0
Barnacle	0	0	0	0	0	0	0	0	0	0

Columbia River Benthos-October 1991
Aquatic Biology Associates for EVS Consultants

	Oct. 6	Sept 24	Oct. 5	Oct. 4	Oct. 9	Oct. 3	Oct. 3	Oct. 2	Oct. 2	Oct. 2
	D14B03	E14B03	D15B01	D16B01	D17B02	D18B03	D19B01	D20B02	D21B02	D22B02
Hydra	0	4	0	0	0	0	0	0	0	0
Tardigrada	0	0	0	0	0	0	0	0	0	0
Unknown vermiform	21	0	0	0	0	0	0	4	2	1
Turbellaria	0	4	0	0	0	0	0	1	0	0
Nematoda	12	0	1	0	24	47	3	762	36	77
Oligochaeta	1335	3	175	295	650	167	381	2142	353	631
Hirudinea	0	0	1	2	1	0	0	0	0	1
Polychaeta	3	0	1	0	0	0	0	111	0	0
Copepoda	0	0	0	0	2	2	0	15	0	52
Cladocera	0	0	1	0	4	2	0	17	0	13
Ostracoda	2	0	1	1	6	4	3	30	1	7
Corophium	70	24	196	0	8	380	121	163	6	1
Gammaridae	0	1	0	0	0	12	0	0	0	0
Asellidae	0	0	0	0	0	7	0	0	0	1
Mysidae	0	0	0	0	0	0	0	0	0	0
*Pelecypoda	5	109	14	3	0	5	10	46	2	10
Anodonta wahlametensis	0	0	0	0	0	0	0	0	0	0
Juga	0	1	0	0	0	0	5	0	0	0
Fluminicola nuttalliana	0	0	0	0	0	0	38	0	1	0
Fluminicola virens	1	13	0	0	0	0	0	0	0	0
Vorticifex effusus	0	1	0	0	0	0	0	0	0	0
Acari	0	1	0	0	0	7	0	7	0	3
Gomphidae-early instar	0	0	0	0	0	0	0	0	0	0
Baetidae-early instar	0	0	0	0	0	0	0	0	0	0
Hexagenia	3	0	0	0	2	0	0	1	0	1
Heptageniidae-early instar	0	0	0	0	0	0	0	0	0	0
Stenonema	0	0	0	0	0	3	0	0	0	0
Hydropsychinae	0	1	0	0	0	0	0	0	0	0
Oecetis	0	0	0	0	1	0	0	0	0	0
Neureclipsis	0	0	0	0	0	2	0	0	0	0
Sialis	0	0	0	0	0	0	0	0	0	0
Ceratopogonidae	0	2	1	0	0	2	0	0	0	0
Chironomidae-pupae	0	0	0	0	1	1	1	8	0	0
Chironomini-early instar	0	0	0	0	0	0	0	0	0	0
Chironomus	0	0	2	12	1	0	0	159	3	26
Cryptochironomus	8	0	5	1	9	0	0	6	0	0
Glypotendipes	0	0	0	0	0	1	0	0	0	0
Orthocladinae-early instar	0	0	0	0	0	0	0	0	0	0
Paracladius	0	0	0	0	0	0	0	3	0	0
Paratanytarsus	0	10	0	0	2	1	0	0	1	0
Procladius	1	0	3	2	0	0	0	23	0	5
Robackia	0	0	0	0	0	0	0	0	0	0
Stictochironomus	1	0	12	0	16	2	0	1	0	0
Tanytarsus	0	0	0	0	0	1	2	31	0	0
?eel larvae	0	0	0	0	0	0	0	0	0	0
Barnacle	0	0	0	0	0	0	0	0	0	0

Columbia River Benthos-October 1991
Aquatic Biology Associates for EVS Consultants

	Oct. 1	Sept 30	Sept. 29	Sept 29	Sept. 29	Sept 29	Sept 28		Sept. 27	Sept 29
	D23B02	D24B01	D25B01	D26B01	D27B03	D28B03	D29B02	D30B03	D31B02	D32B03
Hydra	0	0	0	0	0	0	0	0	0	0
Tardigrada	0	0	0	0	0	0	0	0	0	0
Unknown vermiform	0	5	13	0	43	3	5	0	0	0
Turbellaria	0	0	0	0	0	0	0	0	0	0
Nematoda	760	34	120	1	28	190	57	101	73	8
Oligochaeta	1112	1479	606	3	27	262	27	655	302	5
Hirudinea	0	0	0	0	0	0	0	0	1	0
Polychaeta	0	0	0	0	0	0	0	1	2	1
Copepoda	7	60	7	2	7	6	0	57	10	0
Cladocera	4	35	2	5	0	5	0	0	1	1
Ostracoda	26	3	1	0	16	1	3	0	3	0
Corophium	181	0	2	43	81	167	92	5	12	120
Gammaridae	0	0	0	0	0	0	0	0	0	0
Asellidae	0	0	0	0	0	0	0	0	0	0
Mysidae	0	0	0	0	1	0	0	0	0	0
*Pelecypoda	45	3	0	45	0	1	0	0	56	0
Anodonta wahlametensis	0	0	0	0	0	0	0	0	0	0
Juga	0	0	0	0	0	0	0	0	0	0
Fluminicola nuttalliana	0	0	0	0	0	0	0	0	1	0
Fluminicola virens	0	0	0	0	0	0	0	0	0	0
Vorticifex effusus	0	0	0	0	0	0	0	0	0	0
Acari	2	0	4	0	5	3	2	0	5	0
Gomphidae-early instar	0	0	1	0	0	1	1	1	0	0
Baetidae-early instar	0	0	0	0	0	0	0	0	0	0
Hexagenia	6	0	1	0	0	0	0	5	1	0
Heptageniidae-early instar	0	0	0	0	0	0	0	0	0	0
Stenonema	0	0	0	0	0	0	0	0	0	0
Hydropsychinae	0	0	0	0	0	0	0	0	0	0
Oecetis	0	0	0	0	0	0	0	0	0	0
Neureclipsis	0	0	0	0	0	0	0	0	0	0
Sialis	0	0	0	0	0	0	0	0	0	0
Ceratopogonidae	2	0	3	0	0	1	0	2	1	0
Chironomidae-pupae	1	4	0	0	1	2	0	0	0	0
Chironomini-early instar	0	6	0	0	0	0	0	0	0	0
Chironomus	8	51	3	0	0	4	0	7	23	2
Cryptochironomus	19	8	15	0	0	10	3	3	4	0
Glyptotendipes	0	0	0	0	0	0	0	0	0	0
Orthocladinae-early instar	0	0	0	0	0	0	0	0	0	0
Paracladius	0	0	0	0	0	0	0	0	0	0
Paratanytarsus	0	0	0	0	0	0	0	0	0	0
Procladius	1	3	2	0	0	0	0	0	0	0
Robackia	0	0	0	0	0	0	0	0	0	0
Stictochironomus	0	3	1	0	0	13	0	0	0	0
Tanytarsus	2	1	0	0	0	3	2	0	2	0
?eel larvae	0	0	0	0	0	1	0	0	0	0
Barnacle	0	0	0	0	0	0	0	0	0	1

Columbia River Benthos-October 1991
Aquatic Biology Associates for EVS Consultants

	Sept 27	Sept 27	Sept 26	Sept 26		Sept 25	Sept 24	Sept 24
	D33B01	D34B01	D35B01	D36B01	D37B01	D38B03	D39B03	D40B01
Hydra	0	0	0	0	0	0	0	0
Tardigrada	0	0	1	0	0	0	0	0
Unknown vermiform	0	1	3	2	0	0	0	2
Turbellaria	0	0	0	0	1	0	0	0
Nematoda	211	1	35	29	53	1	1	3
Oligochaeta	138	4	1996	40	156	7	2	3
Hirudinea	0	0	1	0	0	0	0	0
Polychaeta	0	0	0	0	1	0	0	0
Copepoda	4	0	46	0	1	0	0	0
Cladocera	0	0	5	0	0	0	0	0
Ostracoda	8	2	23	19	1	0	0	0
Corophium	155	14	13	1	27	0	0	6
Gammaridae	0	0	0	0	0	0	0	0
Asellidae	0	0	1	0	0	0	0	0
Mysidae	0	0	0	1	0	0	0	0
*Pelecypoda	38	0	0	75	21	0	29	1
Anodonta wahlamatensis	0	0	0	1	0	0	0	0
Juga	0	0	0	0	0	0	0	0
Fluminicola nuttalliana	0	0	0	0	0	0	0	0
Fluminicola virens	0	0	0	0	0	0	0	0
Vorticifex effusus	0	0	0	0	0	0	0	0
Acari	0	0	3	5	2	0	0	0
Gomphidae-early instar	0	0	0	0	0	0	0	0
Baetidae-early instar	0	0	0	0	0	0	0	0
Hexagenia	0	0	1	3	0	0	0	0
Heptageniidae-early instar	0	0	0	0	0	0	0	0
Stenonema	0	0	0	0	0	0	0	0
Hydropsychinae	0	0	0	0	0	0	0	0
Oecetis	0	0	0	0	0	0	0	0
Neureclipsis	0	0	0	0	0	0	0	0
Sialis	0	0	0	0	0	0	0	0
Ceratopogonidae	0	0	7	0	0	1	1	0
Chironomidae-pupae	1	1	1	2	0	0	1	0
Chironomini-early instar	0	0	0	0	0	0	0	0
Chironomus	11	0	13	0	0	0	0	1
Cryptochironomus	0	3	4	13	6	0	2	0
Glyptotendipes	0	0	0	0	0	0	0	0
Orthocladinae-early instar	0	0	0	0	0	0	0	0
Paracladius	0	0	0	1	0	0	0	0
Paratanytarsus	0	1	2	3	0	0	0	0
Procladius	0	0	2	6	0	0	0	0
Robackia	0	0	0	0	0	0	1	0
Slictochironomus	0	0	46	0	1	0	0	0
Tanytarsus	0	0	3	6	0	0	0	0
?eel larvae	0	0	0	0	0	0	0	0
Barnacle	0	0	0	0	0	0	0	0

BOB WISSEMAN

Aquatic Ecologist
3990 NW Deer Run Road
Corvallis, Oregon 97330
503/752-1568

Mark, Sample notes

D12 B03 → label says "All except molluscs" ← you may have more data.

E8-B02 → 2 vials sent — label says 1 of 5 jars I added the data from the 2 vials together.

E10 B02 → 2 vials 1 labeled 2 of 3 the other 3 of 3 I added the data together.

Unknown vermiform: I don't know even to phyla. I can send some to Brinkhurst to see if he recognizes them.

Oligochaeta - this took the most time. Counts are of "tips"/2. i.e. ant + post. ends counted + divided by 2.

Asellidae - probably Caecidotea (= Asellus), but I have to get hold of some recent publications to see what they did with the names.

*Pelecypoda: I'm enclosing T. Frest's I.D.'s. Condition was poor. I lumped all (except Anodonta) under Pelecypoda. Most = Corbicula fluminea, though some sphaeriids mixed in. You could just append a taxa list of what was positively identified & say that the majority were Corbicula

Gomphidae: all early instar, but interesting. Not Ophiogomphus or Octogomphus.

Hydropsychinae = early instar too small to tell.

Peel larvae → I sent back to you ?reject.

Barnacle: There was one crushed barnacle, ?reject as incidental e.g. fell off a ship or scraped off a piling?

A25 B01 Hexagenia 1
Gomphidae E 1

E10 B02 3 & 3 Baetidae E 2
Heptageniidae E 3

A12 B03 ~~Heptagenia~~
Hexagenia 5
Oecetis 3
Sialis 1

A11 B02 unk = unk. vermiform
A22 B02 unk = " "
A12 B03 unk = " "
A24 B01 " " "
A25 B01 " " "
E8 B02 " " "
A28 B03 " " "
E11 B01 " " "
E6 B01 Flatworm = unk. vermiform 1
A28 B03 Fish = ? eel larvae
A35 B01 ~~Hexagenia~~ 1
Tardigrada 1 ✓
Flatworm = unk. vermiform 3
A27 B03 Shrimp = Mysidae
A13 B01 Hexagenia 5
A18 B03 Stenonema 3
Necneclipsis 2
A12 B03 Hirudinea 3
Asellidae 1
A18 B03 Isopoda = Asellidae
A29 B02 Gomphidae E 1
A36 B01 ~~Hexagenia~~ 3
A32 B03 Barnacle — crushed ? off a ship
E11 B01 Hexagenia 4

E 14 B03 Turbellaria 4
Hydropsychinae E 1

D17 B02 Corophium 8
Hirudinea 1

D11 B02 Hexagenia 1
Gomphidae E 1

D23 B02 Hexagenia 6

D22 B02 Hexagenia 1

D37 B01 Bivalve = Corbicula

E-14 B03 Corophium 24
Gammaridae 1

D25 B01 Amph = Corophium

D 21 B02 " "

E10 B02 383 Gammaridae 1

D30 B03 Amph = Corophium

E7 B02 " "

D26 B01 " "

B35 B01 Corophium 13
Asellidae 1

E11 B01 Amph = Coroph.

E6 B01 " "

D40 B01 " "

D27 B03 " "

D14 B03 " "

D19 B01 " "

D31 B02 " "

D29 B02 " "

D32 B03 " "

D28 B03 Amph = Corophium

E9 B02 " "

D37 B01 " "

D33 B01 " "

D34 B01 " "

D13 B01 " "

D23 B02 " "

E8 B02 " "

D20 B02 " "

D15 B01 " "

D22 B02 Corophium 1
Asellidae 1

D36 B01 Corophium 1
Mysidae 1

D18 B03 Amph = Gammiridae 12
rest Corophium

D11 B02 Amphipoda =
Corophium 36
Gammaridae 12

D15B01 Seriaridae — adults

D40B01 unknown = unk. vermiform w/ eyespots no seg.

D14B03 Ostracoda 2
?Ephemeridae E 3

D27B03 Mites 5
Seriaridae Ad. — vg. eat

D20B02 unknown vermiform 3
" Acari 7
?Ephemeridae E 1

D14B03 unk. vermiform 1 — more Jim's count

D21B02 unk. vermiform 2

D17B02 EPT Hexagenia 2
Baetis 1

D36B01 ? Pelecypoda very shallow

D34B01 Ostracoda 4
Nematoda 1
Corophium 1 — Jim's suicidata not Ephemeroptera

D28B03 Odonata = Gomphidae E

D31B02 Hexagenia E 1
Hirudinea 1

D29B02 unk. vermiform 5

D27B03 unk. verm. 43

D34B01 Flatworm = unk. vermiform

E9B02 Hexagenia E 3
Gomphidae E 3

D30B03 Hexagenia 5-6
Gomphidae E 1
Ceratopogonidae 1

Mark,

I'm returning some lower Columbia River specimens.

Cordell — Microcrustaceans - Ostracoda, Copepoda, Cladocera

If you want these I.D.'d call Jeff Cordell
He do very familiar w/ Col. R. 364 Fisheries Center
microcrustaceans + is fast + Mailstop WH-10
cheap. Un. Wash. 98195
206-543-7532

ok Oligochaetes: These can be I.D.ed by A. Spencer or A. Brinkhurst, but it will be expensive. However, it would supply very useful information, since they're dominant.

ok Nematoda: someone, somewhere may be able to I.D., but I don't know who or where.

ok Ceratopogonids: There is someone in BC that may be able to take to genus.

Cordell — Amphipods: I've divided into Corophium + Gammaridae only. There are only a few gammarids, which I think are estuarine-marine related. I can't do.

Corophium - common to abundant in some samples. I used to do these guys, but that was 15 years ago. I haven't kept up. Someone up there could probably get a sp(p.) name on large o's.

Cordell — Mysid shrimp: 2 specimens prob. Neomysis, but may be your marine guy ~~do~~ could I.D.

Polychaetes: a few. Howard Jones in Corvallis can I.D. if necessary.

Ephemeroptera: some Hexagenia in samples.
a few early instar Baetidae + Heptageniidae, which I can't take further.

Caddis: a few Oecetis, Nemaclipsis, Hydropsychinae - early instar

Molluscs: I'm having Terry Frest in Seattle do the molluscs. The sphaeriids are really decalcified. There's a mix of sphaeriids, Corbicula & estuarine ?Macoma bivalves. I need someone like Terry to make the separation, since there are lots of juveniles & decalcified specimens.

Midges: being done

Hirudinea: leeches, a few: may send out to Klemm

Gomphidae (Odonata): very curious specimens, but all early instar. I will send to a specialist.

~~Asselli~~ Asellidae (Isopoda): will probably leave at family for now. They've squirreled around with the nomenclature recently, and I haven't caught up with the literature on this group.

Unknown vermiform: I have occassional specimens of an unknown vermiform (worm-like) animal, that I can't even take to phyla. I've seen it before in freshwater, large rivers, so ~~that~~ I don't think it is of marine-estuarine origin. Right now, I don't know who to ask about it, but will make an attempt to get it further ID'ed.

SECTION B. POLYCHAETE DATA SHEETS

POLYCHAETES

11-21-91 LCR (Lower Columbia River) BENTHOS

Poly. taxonomy for the 14 marine stations: E1, E2, E3, E4, D1, D2, D3, D4, D5, D6, D7, D8, D9, D10.

	D2-B01	11-21-91	Emma As
3:20			
	Heteromastus spp	✓ 1 SAF	
	Holsonia florida	✓ 403	
	Polydora kempi japonica	✓ 140	
Oligs	Streblospio benedicti	✓ ||||- (5)	
J 199	Polydora spp.	✓ ||||-||||- SAF (10)	
	Nereis limnicola	✓ ||||- 1 (6)	
10:00	D3-B03	11-26-91	
10:45			
	Holsonia florida	✓ 159	
	Nereis limnicola	✓ ~~||||~~ (5)	
Oligs	Eteone spp	✓ ~~||||-||||-|||~~ SAF (13)	
J 454!			
11:05	D7-B07	11-26-91	
	Nereis limnicola	✓ 46	
Oligs			
112 ✓			

1:05 D10-B01 12-26-91 Comments
2:15

Chironomid ✓ ~~HHH HHH~~ ~~HHH~~ (15)

Oligs
737!!

2:15 E3-B01 12-26-91
2:29

✓ Nereis spp. ✓ AF, juv.
✓ Chironomid ✓ IIII (4)

Olig
III (X) (3)

2:30 D8-B02 12-26-91
3:10

✓ Chironomid (55) ~~HHH HHH HHH HHH HHH HHH HHH HHH HHH HHH~~ ~~IIII~~
✓ Nereis limnicola ~~HHH HHH~~ II (12)

Oligs
1041

3:11 3:20 D9-B02 12-26-91 Comments

✓ Oligs = 40

3:35 4:00 D5-B01 12-26-91

Oligs 61 ✓

Nereis limnicola ✓ 42

CHIRONOMID ✓ 1

8:28 9:13 E1-B02 12-27-91

Oligs 7 ✓

Etaona spilotus ✓ ||||-|||| || (12)

Hobsonia florida ✓ || (2)

Spio spp. ✓ |||| || USAF (8)

10:20 11:20 D6-B01 12-27-91

Oligs 137 ✓

CHIRONOMID ✓ ~~||||~~-|||| || (12)

Nereis limnicola ✓ ~~||||~~ ~~||||~~ (10)

11:25 D1-201 12-27-91
12:00
3:30

Nereis limnicola ✓ 47
Heteromastus spp. ✓ 1 SAF
Oligs Etcone spilotus ✓ 25
Polydora spp. ✓ 15 VSAF
2109 ✓ SPIONIDAE ✓ 6 VSAF
Hobsonia florida ✓ 490

3:57 E2 - BOJ 12-27-91
4:16

✓ Etcone spilotus ✓ IIII (4)
✓ SPIONIDAE ~~IIII IIII~~ I VSAF (11)
Oligs ✓ Nereis limnicola ✓ 1
91 ✓

6

D4-B02 12-27-91 Comments

	✓	Polydora spp.	91+	
Oligs	✓	Capitella capitata	III (3)	
	✓	Pseudopolydora kempi japonica	(20)	
2479		Nereis limnicola	(6)	
		Pygospio elegans	(117)	
	✓	Polydora spp.	158	JAF
	✓	Barantolla americana	(9)	
	✓	Glycinde picta	(1)	1
	✓	Eteone spp.	(4)	IIII · AF
	✓	Eteone spilotus	(21)	
	✓	AMPHARETINAE		57 very small juv.
	✓	Hobsonia florida		181

SECTION C. NEMATODE DATA SHEETS

LCR - Nematode counts

NEMATODES

Station	Count
D 1	63
D 2	4
D 3	88
D 4	214
D 5	270
D 6	245
D 7	77
D 8	1091
D 9	5
D 10	277
D 11	857
D 12	267
D 13	12
D 14	11
D 15	19
D 16	0
D 17	29
D 18	64
D 19	13
D 20	498
D 21	40
D 22	90
D 23	1004
D 24	72
D 25	132
D 26	0
D 27	37
D 28	200
D 29	59
D 30	143
D 31	42
D 32	10
D 33	200
D 34	3
D 35	57
D 36	41
D 37	32
D 38	0
D 39	1
D 40	0
E 1	4
E 2	3
E 3	26
E 4	5
E 5	23
E 6	17
E 7	0
E 8	58
E 9	9
E 10	10
E 11	288
E 12	0
E 13	29
E 14	0

Sample E12-B01

Ceratopogonidae 37

SECTION D. CRUSTACEA DATA SHEETS

TAXONOMIST COUNT SHEETS

PROJECT NAME LCR PROJECT NUMBER _____ SAMPLING DATE 10/8/91

TAXONOMIST JRC DATE 1/9/92 PAGE 1 OF 1

STATION # D1 - BA1 REPLICATE _____ DEPTH _____

MAJOR TAXON Crustacea

	COUNT	TO REF. COLLECTION	COMMENTS
Araneae (Spiders)	1		
Corophium salmonis	3		
Hemileucon sp.	17		
Eogammarus confervicolus	3		
Monoculodes spinipes	1		
Scotholana canadensis	53		
Calanus sp.	1		
Acartia sp.	1		
Euphausiacea larvae	2		
Acartia longiremis	1		
Balanus sp. juveniles	7		

TAXONOMIST COUNT SHEETS

PROJECT NAME LCR PROJECT NUMBER _____ SAMPLING DATE 10/8/91

TAXONOMIST JRC DATE 1/9/92 PAGE 1 OF 1

STATION # D2 B01 REPLICATE _____ DEPTH _____

MAJOR TAXON Crustacea

	COUNT	TO REF. COLLECTION	COMMENTS
Archaeomysis grebnitzkii	1		
Eogammarus confervicolus	4		
Pseudocalliopius inopinus	1		
Corophium salmonis	2		
Tachidius triangularis	1		

TAXONOMIST COUNT SHEETS

PROJECT NAME LCR PROJECT NUMBER _____ SAMPLING DATE 10/9/91

TAXONOMIST JKC DATE 1/10/92 PAGE 1 OF 1

STATION # D3 B03 REPLICATE _____ DEPTH _____

MAJOR TAXON Crustacea

	COUNT	TO REF. COLLECTION	COMMENTS
Pseudodiaptomus inopinus	1		
Scottolana canadensis	1		

TAXONOMIST COUNT SHEETS

PROJECT NAME LCR PROJECT NUMBER _____ SAMPLING DATE 10/8/91

TAXONOMIST JRC DATE 1/4/92 PAGE 1 OF 1

STATION # D4 B02 REPLICATE _____ DEPTH _____

MAJOR TAXON Crustacea

	COUNT	TO REF. COLLECTION	COMMENTS
Hemilecon sp.	867		
Curelia vulgaris	4		
Eogammarus confervicolus	21		
Scottolana coradensis	12		
Corophium salmonis	1		
Gnorimosphaeroma oregonense	2		
Pinnotheridae megalops	1		

TAXONOMIST COUNT SHEETS

PROJECT NAME LCR PROJECT NUMBER _____ SAMPLING DATE 10/11/91

TAXONOMIST JRC DATE 1/5/92 PAGE 1 OF 1

STATION # D5 - B01 REPLICATE _____ DEPTH _____

MAJOR TAXON Crustacea

	COUNT	TO REF. COLLECTION	COMMENTS
Corophium salmonis		7,259	HH1
Pseudodiaptomus inopinus		29	
Eogammarus confervicolus		1	
Gammarus daiberi		5	
Neomysis mercedis		1	
Scottolana canadensis		1	
Oligochaeta		1	
Turbellaria		1	

TAXONOMIST COUNT SHEETS

PROJECT NAME LER PROJECT NUMBER _____ SAMPLING DATE 10/10/91

TAXONOMIST JRC DATE 1/2/92 PAGE 1 OF 1

STATION # D6 - B01 REPLICATE _____ DEPTH _____

MAJOR TAXON Crustacea

	COUNT	TO REF. COLLECTION	COMMENTS
Corophium salmonis	1,444		
Diptera pupa	1		
Tricactera larvae	2		
Pseudodiaptomus inopinus	8		
Eohaustorius estuarius	1		
Candona sp.	1		
Hyalella azteca	2		
Acanthocyclops vernalis	3		

TAXONOMIST COUNT SHEETS

PROJECT NAME LCR PROJECT NUMBER _____ SAMPLING DATE 10/10/91

TAXONOMIST JRC DATE 12/30/91 PAGE 1 OF 1

STATION # D7-B02 REPLICATE _____ DEPTH _____

MAJOR TAXON Crustacea

	COUNT	TO REF. COLLECTION	COMMENTS
Corophium salmonis	4,392		
Pseudodiaptomus inopinus	15		
Eucypris sp.	3		
Cardona sp.	2		
Diptera larva	1		

TAXONOMIST COUNT SHEETS

PROJECT NAME LCR PROJECT NUMBER _____ SAMPLING DATE 10/12/91

TAXONOMIST JRC DATE 1/3/92 PAGE 1 OF 1

STATION # D8/302 REPLICATE _____ DEPTH _____

MAJOR TAXON Crustacea

	COUNT	TO REF. COLLECTION	COMMENTS
Corophium salmonis	1,864		
Diastylis sp.	2		
Oligochaeta	1		
Candona sp.	5		
Eucypris sp.	3		
Trichoptera larva	1		
Scottolana canadensis	1		
Hydracarina	4		
Paraleptastacus inopinatus	30		
Olona costata	3		

TAXONOMIST COUNT SHEETS

PROJECT NAME: LCR PROJECT NUMBER: _____ SAMPLING DATE: 10/12/91

TAXONOMIST: VRC DATE: 1/5/92 PAGE 1 OF 1

STATION #: D9-B02 REPLICATE: _____ DEPTH: _____

MAJOR TAXON: Crustacea

	COUNT	TO REF. COLLECTION	COMMENTS
Corophium salmonis	271		
Limnoeuthere sp.	1		
Ceratopogonidae larva	1		
Chironomidae larvae	8		

TAXONOMIST COUNT SHEETS

PROJECT NAME LCR PROJECT NUMBER _____ SAMPLING DATE 10/7/91

TAXONOMIST JRC Digital DATE 1/5/92 PAGE 1 OF 1

STATION # D10-B01 REPLICATE _____ DEPTH _____

MAJOR TAXON Crustacea

	COUNT	TO REF. COLLECTION	COMMENTS
Corophium salmonis	559		
Neomysis mercedis	1		
Pseudodiaptomus inscinus	16		
Diptera pupae	2		
Tricoptera larva	1		
Oligochaeta	1		
Gastropoda	1		
Acanthocyclops vernalis	2		
Diacyclops thomasi	1		
Macrocyclops albidus	2		
Chironomidae adult	1		
Odonata, Gomphidae nymphs	3		
Unid. Insecta larva/nymph	1		head only
Leptodiaptomus novomexicanus	1		
Ephemeroptera nymph	1		
Sida crystallina	1		
→ Additions			

TAXONOMIST COUNT SHEETS

PROJECT NAME LCR PROJECT NUMBER _____ SAMPLING DATE 10/9/92

TAXONOMIST JRC DATE 1/8/93 PAGE 1 OF 1

STATION # E1 B02 REPLICATE _____ DEPTH _____

MAJOR TAXON Crustacea

	COUNT	TO REF. COLLECTION	COMMENTS
Corophium salmonis	15		
Grandifoxus grandis	4		

TAXONOMIST COUNT SHEETS

PROJECT NAME LCR PROJECT NUMBER

SAMPLING DATE 10/6/91

TAXONOMIST JRC DATE 1/3/92

PAGE 1 OF 1

STATION # E2 303 REPLICATE DEPTH

MAJOR TAXON Crustacea

	COUNT	TO REF. COLLECTION	COMMENTS
Corophium salmonis	4		
Pseudodiaptomus inopinus	1		
Scottolana canadensis	1		
Acanthocyclops vernalis	1		
Eogammarus confervicolus	1		
Eohaustorius estuarius	13		
Grandifoxus grandis	1		

TAXONOMIST COUNT SHEETS

PROJECT NAME LCR PROJECT NUMBER _____ SAMPLING DATE 10/11/91

TAXONOMIST JRC DATE 1/7/92 PAGE 1 OF 1

STATION # E3 B01 REPLICATE _____ DEPTH _____

MAJOR TAXON Crustacea

	COUNT	TO REF. COLLECTION	COMMENTS
Corophium salmonis	27		
Bosmina longirostris	2		
Daphnia sp.	2		
Eohaustorius estuarius	15		

TAXONOMIST COUNT SHEETS

PROJECT NAME LCR PROJECT NUMBER _____ SAMPLING DATE 10/12/91

TAXONOMIST JRC DATE 1/7/92 PAGE 1 OF 1

STATION # E4 B03 REPLICATE _____ DEPTH _____

MAJOR TAXON Crustacea

	COUNT	TO REF. COLLECTION	COMMENTS
Grachium salmonis	324		
Acanthocyclops vernalis	4		

from: Jeff Cordell
to confirm Wisseman to id's couldn't take spp.

D19 B01 Ostracoda
3 Candona sp.

E11 B01 Ostracoda

9 Candona sp.

D16 B01

1 Eucypris sp.

Ostracoda =
Candona
Eucypris
Cyprinotus
Isocypris

D29 B02 Ostracoda

3 Candona sp.

D15 B01 Ostracoda

1 Candona sp.
1 Eucypris sp.

original count 1 Ostracod

D18 B03 Ostracoda, etc.

4 Candona sp.

D34 B01 Ostracoda

2 Candona sp.

D14 B03 Ostracoda

2 Candona sp.

D13 B01 Ostracoda

4 Candona sp.

D36 B01 Ostracoda

17 Candona sp.
1 Eucypris sp.
1 Cyprinotus sp.

D37 B01 Copepoda, Ostracoda

1 Candona sp.

D21 B02 Ostracoda

1 Candona sp.

D35 B01 Ostracoda, etc.

24 Candona sp.

D17 B02 Ostracoda, etc.

6 Candona sp.

D31 B02 Ostracoda, etc.

3 Candona sp.

D22 B02 Ostracoda, etc.

1 Candona sp.
5 Isocypris sp.
1 Eucypris sp.

D33 B01 Ostracoda, Copepoda

8 Candona sp.
1 Juv. Corophium salmonis

D17 B02 Corophium

8 Corophium salmonis

E14 B03 Corophium

24 Corophium salmonis

E10 B02 3 of 3 Gammaridae

1 Juv. Corophium sp.

D11 B02 Gammaridae

12 Pontoporeia affinis

D18 B03 Gammaridae

12 Crangonyx sp.

E14 B03 Gammaridae

1 Crangonyx sp.

D36 B01 Mysid

1 Neomysis mercedis

D27 B03 Mysid

1 Neomysis mercedis

D 24 B01 Ostracoda, etc.

2 Candona sp.
1 Cypria sp.

D12 B03 Ostracoda, Copepoda

20 Candona sp. no copepods id'ed
5 Isocypris sp.

D11 B02 Ostracoda, etc.

67 Candona sp.
1 Darwinula stevensoni

D20 B02 Ostracoda, etc.

22 Candona sp.
8 Isocypris sp.

D27 B03 Ostracoda, Copepoda

16 Candona sp.

E8 B02 Ostracoda, etc.

9 Candona sp.
1 Limnocythere sp.

D28 B03 Ostracoda, etc.

1 Candona sp.

D23 B02 Ostracoda, etc.

23 Candona sp.
2 Ispcypris sp.

D31 B02 Corophium

11 Corophium salmonis

D29 B02 Corophium

94 Corophium salmonis

E9 B02 Corophium

1 Corophium salmonis

D37 B01 Corophium

28 Corophium salmonis

E6 B01 Corophium

117 Corophium salmonis

D19 B01 Corophium

122 Corophium salmonis

D27 B03 Corophium

83 Corophium salmonis
1 Candona sp.

D40 B01 Corophium

6 Corophium salmonis

D25 B01 Ostracoda, etc.

1 Candona sp.

D14 B03 Ceraphium

70 Ceraphium salmonis

D30 B03 Ceraphium

5 Ceraphium salmonis

E7 B02 Ceraphium

3 Ceraphium salmonis

D26 B01 Ceraphium

41 Ceraphium salmonis

D35 B01 Ceraphium

13 Ceraphium salmonis

E11 B01 Ceraphium

22 Ceraphium salmonis

D25 B01 Ceraphium

2 Ceraphium salmonis

D21 B02 Ceraphium

1e Ceraphium salmonis

D36 B01 Ceraphium

1 Ceraphium salmonis

D1B B03 Corophium

386 Corophium salmonis
1 Hyalella azteca

D11 B02 Corophium

37 Corophium salmonis

EB B02 Corophium

298 Corophium salmonis

D20 B02 Corophium

162 Corophium salmonis

D22 B02 Corophium

1 Corophium salmonis

D34 B01 Corophium

13 Corophium salmonis

D13 B01 Corophium

142 Corophium salmonis

D15 B01 Corophium

197 Corophium salmonis

D28 B03 Corophium

166 Corophium salmonis

D33 B01 Corophium

156 Corophium salmonis

D23 B02 Corophium

178 Corophium salmonis

D32 B03 Corophium

119 Corophium salmonis

SECTION E. INSECT DATA SHEETS

INSECTA

Chironomidae

E6 B01

√ Stictochironomus (1)

OR/WA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: E6 B01
Chironomidae

D27 B03

√ Pupa (1)

OR/WA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D27B03
Chironomidae

D18 B03

Pupa (1)

Paratanytarsus (1)

Tanytarsus (1)

Stictochironomus (2)

Glyptotendipes (1)

OR/WA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D18 B03
Chironomidae

E11-B01

Cryptochironomus (3)

Stictochironomus (1)

Chironomus (7)

Procladius (2)

OR/WA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: E11B01
Chironomidae

D29 - B02

Cryptochironomus (3)

Tanytarsus (2)

OR/WA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D29B02
Chironomidae

D16 - B01

Chironomus (12)

Procladius (2)

Cryptochironomus (1)

OR/WA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D16 B01
Chironomidae

D33 - B01

Pupa (1)

Chironomus - (11)

OR/WA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D33B01
Chironomidae

D31 - B02

Cryptochironomus (4)
Chironomus (23)
Tanytarsus Ø (2)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D31B02
Chironomidae

D-30 B03

Chironomus (7)
Cryptochironomus (3)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D30-B03
Chironomidae

D32 - B03

Chironomus (2)

ORWA:Lower Columbia R. Benthos
Sept/Oct 1991 EVS/ABA
Station: D32 B03
Chironomidae

D40 - B01

Chironomus (1)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D40B01
Chironomidae

D-19 - B01

Tanytarsus (2)
Pupa (1)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D19B01
Chironomidae

D34 - B01

Pupa (1)
Cryptochironomus (2)
Paratanytarsus (1)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D34 B01
Chironomidae

E10 - B02 ~~3 of 3~~

Cryptochironomus (1)

Early Instars:
Chironomini (12)
Orthocladinae (5)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: E10B02. 3 of 3
Chironomidae

D-35 B01

Cryptochironomus (4)
Stictochironomus (46)
Chironomus (13)
Procladius (2)
Tanytarsus (3)
Parabantytarsus (2)
Pupa (1)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D35 B01
Chironomidae

D11 B02

Pupae (10)
Cryptochironomus (87)
Chironomus (192)
Tanytarsus (5)
Stictochironomus (23)
Paracladius (5)
Procladius (9)
Hypotendipes (5)

ORWA:Lower Columbia R. Benthos
Sept/Oct 1991 EVS/ABA
Station: D11B02
Chironomidae

D-22 B02

Chironomus (26)
Procladius (5)

ORWA:Lower Columbia R. Benthos
Sept/Oct 1991 EVS/ABA
Station: D22B02
Chironomidae

D37 - B01

Cryptochironomus (6)
Stictochironomus (1)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D37B01
Chironomidae

D13 B01

Pupae (3)
Tanytarsus (1)
Cryptochironomus (5)
Chironomus (11)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D13B01
Chironomidae

D25 B01
Cryptochironomus (15)
Chironomus (3)
Stictochironomus (1)
Psadadius (2)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D25B01
Chironomidae

E7 B02
Stictochironomus (37)
Cryptochironomus (7)

ORWA:Lower Columbia R. Benthos
Sept/Oct 1991 EVS/ABA
Station: E7B02
Chironomidae

E14 B03
Paratanytarsus (10)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: E14B03
Chironomidae

D12 B03
Pupae (2)
Tanytarsus (5)
Stictochironomus (1)
Psadadius (21)
Cryptochironomus (30)
Chironomus (11)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D12B03
Chironomidae

D21 B02
Chironomus (2)
Paratanytarsus (1)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D21B02
Chironomidae

D17 B02
Pupa (1)
Cryptochironomus (9)
Stictochironomus (16)
Chironomus (1)
Paratanytarsus (2)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D17B02
Chironomidae

D23 B02

Pupa (1)
Chironomus (8)
Cryptochironomus (19)
Psectrocladius (1)
Tanytarsus (2)

OR/WA:Lower Columbia R. Benthos
Sept/Oct 1991 EVS/ABA
Station: D23 B02
Chironomidae

E9 B02

Chironomus (2)
Cryptochironomus (2)
Early instars: Chironomini (6)

OR/WA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: E9B02
Chironomidae

D20 B02

Pupae (8)
Chironomus (159)
Cryptochironomus ~~(4)~~ (6)
Stictochironomus (1)
Tanytarsus (31)
Paracladius (3)
Psectrocladius (23)

OR/WA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D20B02
Chironomidae

D24 B01

Pupae (4)
Chironomus (51)
Cryptochironomus (8)
Stictochironomus (3)
Tanytarsus (1)
Psectrocladius (3)
Early Instars: Chironomini (6)

OR/WA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D24B01
Chironomidae

D28 B03

Pupae (2)
Cryptochironomus (18)
Chironomus (4)
Tanytarsus (3)
Stictochironomus (13)

OR/WA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D28 B03
Chironomidae

D15 - B01

Chironomus (2)
Stictochironomus (12)
Procladius (3)
Cryptochironomus (5)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D15B01
Chironomidae

E8 B02

Cryptochironomus (5)
Tanytarsus (1)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: E8B02
Chironomidae

D36 B01

Pupae (2)
Procladius (6)
Cryptochironomus (13)
Tanytarsus (6)
Paracladius (1)
Paratanytarsus (3)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D36B01
Chironomidae

D39 B03

Pupa (1)
Cryptochironomus (2)
Robackia (1)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D39B03
Chironomidae

D14 - B03

Cryptochironomus (7)
Procladius (1)
Stictochironomus (1)

ORWA:Lower Columbia R. Benthos
Sept/Oct. 1991 EVS/ABA
Station: D14B03
Chironomidae

SECTION F. MOLLUSC DATA SHEETS

Environmental Consultants

TAXONOMY FORM

MOLLUSCS

PROJECT NAME: LCR

DATE: 1 / 11 / 1991

PROJECT #: 2/271-073

Verified by: ______

Sample No.	Rep.	Taxa Name	NODC Code	Count	I.D. By	Comments
LCRD4B02	✓	Macoma balthica		61	[illegible]	[illegible]
LCRD4B02	✓	Macoma balthica	(≈ 207)	74	"	
LCRD4B02	✓	Macoma balthica		72	"	
LCRD5B01	✓	Astarte c.f. compacta		21	"	MOSTLY JUVS.
LCRD1B01	✓	Macoma balthica		201	"	
	✓	Mya arenaria		65	"	
	✓	Mytilus edulis		1	"	
LCRD2B01	✓	Macoma balthica		204	"	
	✓	Mya arenaria		13	"	
LCRD6B01	✓	Astarte c.f. compacta		43	"	MOSTLY JUVENILES
	✓	LITTORINACEA		12	"	
LCRD7B02	✓	Astarte c.f. compacta		73	"	" "
	✓	~~LITTORINACEA~~ CERITHIACEA		2	"	
LCRD8B02	✓	LITTORINACEA		228	"	" "
	✓	GASTROPODA SP. INDETERMINATE		5	"	BROKEN JUVENILES
	✓	Astarte c.f. compacta		2	"	
LCRD9B02	✓	Astarte c.f. compacta		22	"	MOSTLY JUVENILES
	✓	LITTORINACEA		4	"	
LCRD10B01	✓	LITTORINACEA		72	"	" "
	✓	Astarte c.f. compacta		97	"	" "
LCRD3 B03	✓	Macoma balthica		110	"	
	✓	Mya arenaria		19	"	
	✓	Mytilus edulis		1	"	
LCRE1B02	✓	Macoma ~~sp.~~ cf. balthica		1	"	JUVENILE
	✓	BIVALVIA SP. INDETERMINATE		1	"	"
LCRE1B02	✓	Astarte c.f. compacta		11	"	
LCRE2B03	✓	Macoma balthica		42	"	
LCRE4B03	✓	Astarte c.f. compacta		3	"	"
LCRE4B03	✓	BIVALVIA SP. INDETERMINATE		2	"	NO SHELLS

[illegible] => [illegible]

Deixis

consultants

January 14, 1992

Gary Rosenthal
EVS Consultants
2517 Eastlake Avenue East
Seattle, WA 98102

Dear Gary:

The preliminary identifications for the first batch of lower Columbia River molluscs follow. There was some difficulty with the smaller specimens, as the majority of them were wholly or partially decalcified, making identification on hinge characters impossible to very difficult. Hence, total diversity , especially of Sphaeriidae, is probably being underestimated at some sites. Should occasion arise in the future, it would be better to preserve samples with small molluscs in alcohol immediately, rather than to stick them in formaldehyde first, as I presume was done with these.

In any case, most of the sites are not particularly diverse, and most of the species are quite common taxa elsewhere in the system, with one exception. All of the *Juga* appear to be *J. (J.) hemphilli hemphilli* (Henderson, 1935), a very rare taxon that I have suggested as Endangered federally in the past. The type locality was in the vicinity of Portland. We have collected over 100 *Juga* sites in the Columbia Gorge from 1988-1991 and found only one other possible live site.

LCR D28 B03 9/29/91 1 vial largely decalcified
Corbicula fluminea (Müller, 1774)

[LCR] D29 B02 9/28/91 1 vial partly decalcified; rare ostracods present also
Corbicula fluminea (Müller, 1774) very young only

LCR D30 B03 no date 1 vial mostly decalcified; rare ostracods present also
Corbicula fluminea (Müller, 1774) very young only
Pisidium sp. too decalcified to be sure

[LCR] D24 B01 no date 1 vial; completely decalcified
Corbicula fluminea (Müller, 1774) very young only

LCR D27 B03 9/29/91 1 vial largely decalcified
Corbicula fluminea (Müller, 1774) mostly very young; 1 larger

LCR D12 B03 10/7/91 1 vial slightly decalcified
Corbicula fluminea (Müller, 1774)
Fluminicola virens (Lea, 1838)
Fluminicola nuttalliana (Lea, 1838)
Pisidium (Cyclocalyx) casertanum (Poli, 1795)
Pisidium (Cyclocalyx) compressum Prime, 1852
Sphaerium (S.) patella (Gould, 1850)

LCR D18 B03 10/3/91 2 vials partly decalcified; ostracods present also
Corbicula fluminea (Müller, 1774)
Fluminicola virens (Lea, 1838)
Fluminicola nuttalliana (Lea, 1838)
Juga (J.) hemphilli hemphilli (Henderson, 1935)

6842 24th Ave. NE Seattle, WA 98115 (206) 527-6764

LCR E06 B01 10/4/91 1 vial completely decalcified
Corbicula fluminea (Müller, 1774) very young only
Pisidium sp. too far gone to identify

LCR D25 B01 9/25/91 1 vial partly decalcified
Corbicula fluminea (Müller, 1774)
Sphaerium (S.) patella (Gould, 1850) very young

LCR D17 B02 10/9/91 1 vial partly decalcified
Corbicula fluminea (Müller, 1774)
Juga (J.) hemphilli hemphilli (Henderson, 1935)
Fluminicola virens (Lea, 1838)
Pisidium (Cyclocalyx) compressum Prime, 1852

LCR D33 B01 9/27/91 1 vial mostly decalcified; common ostracods
Corbicula fluminea (Müller, 1774)
Pisidium sp. could be *casertanum*, but too far gone to be sure

LCR D34 B01 9/27/91 1 vial largely decalcified; ostracods present also
Corbicula fluminea (Müller, 1774)

LCR D32 B03 9/29/91 1 vial partly decalcified
Corbicula fluminea (Müller, 1774) very young only

LCR D35 B01 9/26/91 1 vial almost completely decalcified
Corbicula fluminea (Müller, 1774) mostly very young
Ferrissia parallelus (Haldeman, 1841)
Menetus opercularis (Gould, 1847)* very young

* according to Taylor (1981) *opercularis* was endemic to Mountain Lake, CA, and is now extinct, and the proper name of this taxon is *M. calliogiyptus* (Vanatta, 1895); Burch (1989) uses *opercularis*.

I hope this is useful. I will bill after all material has been received and identified. If possible. I would like to get the localities for the sites with *J. (J.) hemphilli hemphilli* to allow recollection later.

Sincerely yours,

Terrence J. Frest

Deixis

consultants

January 15, 1992

Gary Rosenthal
EVS Consultants
2517 Eastlake Avenue East
Seattle, WA 98102

Dear Gary:

The final identifications for the first batch of lower Columbia River molluscs follow. Making the counts allowed for more positive identifications for some specimens. Most of the unidentifiable bivalves are very young decalcified specimens that have also been smashed or show sufficient tissue deterioration as to make determination impossible. Most are very likely *C. fluminea*; but in a few lots, as noted individually below, there is some possibility that some are *Pisidium* or *Sphaerium*.

LCR D28 B03 9/29/91 1 vial largely decalcified; rare ostracods present also
Corbicula fluminea (Müller, 1774) 21 ✓
unidentifiable bivalves, probably *C. fluminea* 20 ✓

[LCR] D29 B02 9/28/91 1 vial partly decalcified; rare ostracods present also
Corbicula fluminea (Müller, 1774) very young only 36 ✓

LCR D30 B03 no date 1 vial mostly decalcified; rare ostracods present also
Corbicula fluminea (Müller, 1774) very young only 26 ✓
Pisidium sp. too decalcified to be sure 1 ✓
unidentifiable bivalves, probably *C. fluminea*, could include sphaeriids 44 ✓

[LCR] D24 B01 no date 1 vial; completely decalcified
Corbicula fluminea (Müller, 1774) very young only 4 ✓
unidentifiable bivalves, probably *C. fluminea* 11 ✓

LCR D27 B03 9/29/91 1 vial largely decalcified
Corbicula fluminea (Müller, 1774) mostly very young; 1 larger 23 ✓
unidentifiable bivalves, probably *C. fluminea* 149 ✓

LCR D12 B03 10/7/91 1 vial slightly decalcified
Corbicula fluminea (Müller, 1774) 17 ✓
Fluminicola virens (Lea, 1838) 2 ✓
Fluminicola nuttalliana (Lea, 1838) 6 ✓
Pisidium (Cyclocalyx) casertanum (Poli, 1795) 11 ✓
Pisidium (Cyclocalyx) compressum Prime, 1852 4 ✓
Sphaerium (S.) patella (Gould, 1850) 1 ✓

LCR D18 B03 10/3/91 2 vials partly decalcified; ostracods present also
Corbicula fluminea (Müller, 1774) 112 ✓
unidentifiable bivalves, probably *C. fluminea* 31 ✓
Fluminicola virens (Lea, 1838) 7 ✓
Fluminicola nuttalliana (Lea, 1838) 27 ✓
Juga (J.) hemphilli hemphilli (Henderson, 1935) 30 ✓
Pisidium (Cyclocalyx) casertanum (Poli, 1795) 3 ✓
Pisidium (Cyclocalyx) compressum Prime, 1852 4 ✓

6842 24th Ave. NE Seattle, WA 98115 (206) 527-6764

LCR E06 B01 10/4/91 1 vial completely decalcified

Corbicula fluminea (Müller, 1774) very young only	43 ✓
Pisidium sp. too far gone to identify	1 ✓
unidentifiable bivalves, probably *C. fluminea*, could include sphaeriids	85 ✓

LCR D26 B01 9/25/91 1 vial partly decalcified

Corbicula fluminea (Müller, 1774)	3 ✓
Sphaerium (S.) patella (Gould, 1850) very young	2 ✓

LCR D17 B02 10/9/91 1 vial partly decalcified

Corbicula fluminea (Müller, 1774)	35 ✓
unidentifiable bivalves, probably *C. fluminea*	93 ✓
Juga (J.) hemphilli hemphilli (Henderson, 1935)	4 ✓
Fluminicola virens (Lea, 1838)	4 ✓
Fluminicola nuttalliana (Lea, 1838)	7 ✓
Pisidium (Cyclocalyx) compressum Prime, 1852	4 ✓

LCR D33 B01 9/27/91 1 vial mostly decalcified; common ostracods

Corbicula fluminea (Müller, 1774)	35 ✓
unidentifiable bivalves, probably *C. fluminea*, could include sphaeriids	30 ✓
Pisidium sp. could be *casertanum*, but too far gone to be sure	3 ✓

LCR D34 B01 9/27/91 1 vial largely decalcified; ostracods present also

Corbicula fluminea (Müller, 1774)	27 ✓
unidentifiable bivalves, probably *C. fluminea*, could include sphaeriids	34 ✓

LCR D32 B03 9/29/91 1 vial partly decalcified

Corbicula fluminea (Müller, 1774) very young only	7 ✓
unidentifiable bivalves, probably *C. fluminea*	56 ✓

LCR D35 B01 9/26/91 1 vial almost completely decalcified

Corbicula fluminea (Müller, 1774) mostly very young	11 ✓
unidentifiable bivalves, probably *C. fluminea*	155 ✓
Ferrissia parallelus (Haldeman, 1841)	13 ✓
Menetus opercularis (Gould, 1847) very young	1 ✓

Deixis

consultants

February 28, 1992

Gary Rosenthal
EVS Consultants
2517 Eastlake Avenue East
Seattle, WA 98102

Dear Gary:

The identifications for the last batch of lower Columbia River molluscs follow. I assume there are more to come, as the original material you showed us had specimens of *Juga* (*J.*) *plicifera bulimoides*, and none of the samples identified so far has this species. To date, this project has required about 10 hours to complete. This is much longer than would normally be needed forthis amount of material: but the rather poor preservation of much of it complicated matters. Were the material all in good shape, I would guess that closer to 4 hours would have been required to identify and count it. In any case, I recall that some of the samples collected were said to be from the deltaic and estuarine areas near the mouthof the Columbia. If so, I have not seen anything as yet with marine or brackish mollusc taxa. My own collections from the mouth of the Columbia and some distance upstream indcated that polychaetes and brackish-marine amphipods penetrated some distance up the river, even where the mollusc fauna was all still clearly freshwater. On the other hand, far enough out there are indeed brackish mollusc taxa in the river, such as *Battilaria* and a few bivalves. *Corbicula* should range pretty far out. It should be noted that younger corbiculids, with the concentric growth rings smoothed by formalin, have been mistaken for young *Macoma*, *Astarte*, or even *Spisula* in other West Coast river delta benthic studies, so identification from good specimens is adeseratum.

LCR E10 B02 9/29/91 3 vials mostly decalcified
Corbicula fluminea (Müller, 1774) 6 ✓
unidentifiable bivalves, probably *C. fluminea* 86 ✓

LCR D30 B03
Corbicula fluminea (Müller, 1774) 2

LCR E13 B03 9/25/91 largely decalcified; uncommon ostracods
Corbicula fluminea (Müller, 1774) 13 ✓
unidentifiable bivalves, probably *C. fluminea* 114 ✓

LCR E8 B02 10/1/91 5 containers largely decalcified; common ostracods
Corbicula fluminea (Müller, 1774) 17 ✓
unidentifiable bivalves, probably *C. fluminea* 363 ✓

LCR E9 B02 9/30/91 partly decalcified; uncommon ostracods
Pisidium (*C.*) *casertanum* (Poli, 1795) 1 ✓
Corbicula fluminea (Müller, 1774) 13 ✓
unidentifiable bivalves, probably *C. fluminea* 13 ✓

LCR E5 B03 partly decalcified; rare ostracods
Corbicula fluminea (Müller, 1774) 3 ✓
unidentifiable bivalves, probably *C. fluminea* 14

Sincerely yours,

Terrence J. Frest

6842 24th Ave. NE Seattle, WA 98115 (206) 527-6764

Deixis

consultants

February 28, 1992

Bob Wisseman
Aquatic Biology Associates
3490 NW Deer Run Road
Corvallis, OR 97330

Dear Bob:

Your Musselshell Co. ca. 35 mi. N. of Billings, MT stuff is as follows:

Pisidium (*C.*) *casertanum* (Poli, 1795)	4
Musculium lacustre (Muller, 1774)	3
Stagnicola caperata(Say, 1829)	24
Gyraulus (*T.*) *parvus* (Say, 1817	55
Fossaria modicella Say, 1825	15
Physella (*P.*) *virgata* subsp.(Gould, 1855)	9
Physella (*P.*) *gyrina* subspp. (Say, 1821	many

MO Ozarks W. Forks site 1 ASARCO 9/28/91 *Elimia potosiensis potosiensis* (Lea, 1841)

MO Ozarks W. Forks site 2 ASARCO 9/28/91 *Elimia potosiensis potosiensis* (Lea, 1841)

The EVS/ABA stuff is as follows:

E14 B03	mostly decalcified; many crushed also	
	Corbicula fluminea (Muller, 1774)	4
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaeriids	81
D19 B01	mostly decalcified; many crushed also	
	Pisidium (*N.*) *punctatum* Sterki, 1895	2
	Corbicula fluminea (Muller, 1774)	2
	?*Corbicula fluminea* (Muller, 1774)	5
E8 B02	completely decalcified	
	?*Corbicula fluminea* (Muller, 1774)	1
D33 B01	mostly decalcified	
	Corbicula fluminea (Muller, 1774)	6
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaeriids	32
D28 B03	completely decalcified	
	Corbicula fluminea (Muller, 1774)	1
E6 B01	completely decalcified	
	?*Corbicula fluminea* (Muller, 1774)	3
E7 B02	mostly completely decalcified	
	Corbicula fluminea (Muller, 1774)	3
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaeriids	1
D39 B03	many crushed & partly decalcified	
	Corbicula fluminea (Muller, 1774)	23
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaeriids	6

D26 B01	some crushed; all partly decalcified	
	Corbicula fluminea (Muller, 1774)	6
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaerids	36
E11 B01	some crushed; most partly decalcified	
	Pisidium sp.	1
	Corbicula fluminea (Muller, 1774)	2
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaerids	33
D20 B02	crushed and largely decalcified	
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaerids	41
D11 B02	good condition	
	Fluminicola virens (Lea, 1838)	3
	Juga (*J.*) sp. could be either *silicula* or *plicifera*	1
D18 B03	completely decalcified	
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaerids	5
D16 B02	partly decalcified; some crushed	
↑ Dll probably	*Corbicula fluminea* (Muller, 1774)	22
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaerids	165
	Pisidium (*C.*) *compressum* Prime, 1852	24
	Pisidium spp. (badly preserved mix-likely *compressum*, *casertanum*, ? *punctatum*)	37
D14 B03	partly decalcified	
	Corbicula fluminea (Muller, 1774)	3
	Pisidium (*C.*) *casertanum* (Poli, 1795)	1
	Pisidium (*N.*) *punctatum* Sterki, 1895	1
	Fluminicola virens (Lea, 1838)	1
D13 B01	good preservation	
	Fluminicola nuttalliana (Lea, 1838)	25
	Juga (*J.*) *plicifera* subsp.?	1
	Corbicula fluminea (Muller, 1774)	22
E14 B03	good preservation	
	Corbicula fluminea (Muller, 1774)	2
D40 B01	good preservation	
	Corbicula fluminea (Muller, 1774)	1
D31 B02	partly decalcifiec	
	Corbicula fluminea (Muller, 1774)	49
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaerids	8
	Fluminicola nuttalliana (Lea, 1838)	1
D19 B01	good preservation	
	Juga (*J.*) *plicifera bulimoides* Lea, 1856	5
	Corbicula fluminea (Muller, 1774) — add to other	1
	Fluminicola nuttalliana(Lea, 1838) [odd flat-sided morph-looks like lower Willamette R. form]	38
D21 B02	partly decalcified	
	Corbicula fluminea (Muller, 1774)	1
	unidentifiable bivalve, ? *C. fluminea*	1

D37 B01	good preservation	
	Corbicula fluminea (Muller, 1774)	1
D23 B02	some completely decalcified	
	Corbicula fluminea (Muller, 1774)	37
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaeriids	6
D22 B02	some decalcified	
	Corbicula fluminea (Muller, 1774)	9
	unidentifiable bivalve, likely *C. fluminea*	1
D36 B01	some crushed and/or decalcified	
	Corbicula fluminea (Muller, 1774)	66
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaeriids	6
	Sphaerium sp. [could be *patella* juv.]	2
D36 B01	good preservation	
	Anodonta wahlametensis Lea, 1838	1
E14 B03	fair preservation	
	Juga (J.) plicifera subsp.?	1
	Fluminicola virens (Lea, 1838)	13
	Vorticifex effusus (Lea, 1856)	1
D21 B02	good preservation	
	Fluminicola nuttalliana (Lea, 1838)	1
D15 B01	some crushed	
	Corbicula fluminea (Muller, 1774)	12
	unidentifiable bivalves, likely *C. fluminea*	2
D13 B01	partly decalcified	
	Corbicula fluminea (Muller, 1774)	3
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaeriids	2
	Pisidium (N.) punctatum Sterki, 1895	1
	Sphaerium sp. [juv.: could be *patella* or *transversum*]	2
D24 B01	completely decalcified	
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaeriids	3
D37 B01	some crushed; all partly or wholly decalcified	
	Corbicula fluminea (Muller, 1774)	6
	unidentifiable bivalves, mostly *C. fluminea*, could include sphaeriids	13

Please note that no definite marine-brackish molluscs are present, even if polychaetes, etc. are. I've collected pretty far down the Columbia without getting marine or brackish molluscs myself, even though other marine forms (including amphipods and polychaetes) do get fairly far up. Some appear marine (i.e. like *Macoma*, etc.) due to partial decalcification. Almost all samples partly or wholly decalcified, making identifications difficult and probably resulting in underestimation of diversity.

The *Anodonta* is interesting, as I have suggested this species for Endangered listing. The only other close relative in the lower Columbia is *A. californiensis*, currently a listing candidate. *Pisidium punctatum* is quite rare anywhere. This stuff took longer than usual because of poor preservation.

Terrence J. Frest

SECTION G. TAXONOMIC GROUP COUNTS

LCR E6B01
10/14/91

Ceratopogonidae 7
Chironomidae 1
Oligochaetae 8
Nematoda 10
Copepoda 2
Sphaeriidae 3 — bivalve
Amphipoda 120 — Corophium
~~Platyhelminthes~~ 1 ← unk. worm

LCIL E7B02 10/3/91

Chironomidae 44
Oligochaetae 2
Sphaeriidae 4 → 6. value
Amphipoda 3

LCR
E8-B02

Ceratopogonidae 24
Oligochaetae 4
Copepoda 5

This data added to other sheet

LCR ES B02 (1-5 jars)
10-1-91

Ceratopogonidae ~~22~~ 46
Nematoda 48
Amphipoda 251 ← all Corophium
Copepoda ~~30~~ 35
Cladocera 29
Ostracoda 10
Chironomidae 8
Sphaeriidae 1
Oligochaetae ~~56~~ 67
unknown vermiform 27 (Flatworm, leech, oligo.?) – unknown vermiform

LCR EQB02

9-30-91

EPT 6 (3 are odonata)
Chironomidae 12
Amphipoda 1
Nematoda 5
Ceratopogonidae 1
Copepoda 1
Oligochaetae 828

LCR

E10-B02 2013

Oligochaetae 8
Nematoda 2
Sphaeriidae 1 – bivalve
Ceratopogonidae 1

added to other sheet

LCR E10-B02 3 of 3
9/29/91

EPT 5
Ceratopogonidae x 2
Oligochaetae 4 12
Chironomidae 28
Copepoda 4
Nematoda x 3
Cladocera 2
Amphipoda 1
Sphaeriidae 1 – Pelecypoda

LCR E11B01

9/25/71

EPT 4:

Chironomidae 13

Amphipoda 22

Ostracoda 10

Sphaeriidae 37 — Pelecypoda

Polychaetae 1

Nematoda 277

Oligochaetae 365

Unknowns 3

LCR E13B03
9-25-91

Ceratopogonidae 28
Nematoda 2
Copepoda 9
Cladocera 9

LCR E14B03 9/24/91

Bivalve 2
Sphaeriidae 107 → Pelecypoda
Gastropod 15
Amphipoda 25
Chironomidae 10
Flatworm 4 - Turbellaria
EPT 1
mites 1
Hydra 4
Ceratopogonidae 2
Oligochaetae 3

LCR D11B02
10-7-91

Ostracoda 66
Copepoda 11
Cladocera 7
EPT 2 (one is Odonata)
mites 4
Chironomidae 286 (10 are pupae)
Sphaeriidae 273 - Pelecypoda
Gastropoda 4
Amphipoda 52
Nematoda 780
Oligochaeta 3607
Polychaetal 2
unknown worm 1
Ceratopogonidae 15

LCR DR2B03 10-7-91 (All except MOLL) written on label

Does Mark have other mollusks

Chironomidae 70 (2 are pupae)
Oligochaetae 1354
Ceratopogonidae 8
Ostracoda 25
Nematoda 203
Leeches 3 — Hirudinea
Copepoda 13
Isopoda 1
Mites 3
EPT 9
unknown 17 — unk. vermi

LCR D13 B01 10/6/91

Bivalve 2
Gastropod 28
Sphaeriidae 8 — Pelecypoda
Chironomidae 18 + 2 pupae + ~~adult~~
Polychaetae 7 2 families
EPT 5
Ostracoda 4
Amphipoda 144
Oligochaetae 278

LCR D14803
10/6/91

Polychaetae 3
Oligochaetae 1335
Ostracoda 2
EPT 3
Nematoda 12
Sphaeriidae 5 ← Pelecypoda
Chironomidae 10
Amphipoda 70
unknown? 21 unkn. vermiform

LCR DIS BOI

10/5/71

Amphipoda 196
Polychaetae 1
Chironomidae 22
Ceratopogonidae 1
Sphaeriidae 14 – Pelecypoda
~~Sciaridae 3 adults~~ reject
Leech 1 – Hirudinea
Cladocera 1
Nematoda 1
Ostracoda 1
Oligochaetae 175

LCR D16-601
10/4/91

Oligochaeta 295
Chironomidae 15
Sphaeriidae 3 - Pelecypoda
Leeches 2 - Hirudinea
Ostracoda 1

LCR D17B02

10-9-91

Chironomidae 29 (1 is pupa)
Leech 1 - Hirudinea
Amphipoda 8
EPT 3
Ostracoda 6
Nematoda 24
Copepoda 2
Cladocera 4
Oligochaetae 650

LCR

D18 B03 10/3/91

Amphipoda 392
Isopoda 7
EPT 5
Nematoda 47
Sphaeriidae 5 → Pelecypoda
Cladocera 2
Copepoda 2
Ostracoda 4
mites 7
Ceratopogonidae 2
Chironomidae 5 + 1 pupa
Oligochaetae 167

LCR D19B01 10/3/91

Gastropod 43
Amphipoda 121
Nematoda 3
Ostracoda 3
Chironomidae 2 + 1 pupa
Sphaeriidae 9 · 1 Immature
Oligochaetae 381

LCR D20 B02 10-2-91

Ostracoda 30
Copepoda 15
Cladocera 17
EPT 1
mites 7
Chironomidae 231 (8 are pupae)
Sphaeriidae 46 - Pelecypoda
Amphipoda 163
Nematoda 762
Oligochaetae 2142
Polychaetae 111
Flatworm 1 - Hirudinea
unknown 4 - unkn. vermiform

LCR D21-802

10-2-91

Oligochaetae 353
Amphipoda 6
Chironomidae 4
Sphaeriidae 2 - Pelecypoda
Gastropoda 1
Nematoda 36
Ostracoda 1
unknown 2 - unk. vermiform

LCR D22B02 10-2-91

Chironomidae 31
EPT 1
mites 3
Copepoda 52
Cladocera 13
Ostracoda 7
Amphipoda 1
Nematoda 77
Oligochaetae 631
Sphaeriidae 10 - Pelecypoda
Isopoda 1 - Asellidae
Leech 1 — Hirudinea
unknown 1 — unid. worm

LCR D23B02

10-1-91

EPT 6
mites 2
Copepoda 7
Cladocera 4
Chironomidae 31 (meiopega)
Sphaeriidae 45 - Pelecypoda
Ostracoda 26
Amphipoda 181
Nematoda 760
Oligochaetae 1112
Ceratopogonidae 2

LCR D24801

9-30-91

Nematoda 34

Chironomidae 76 (3 are pupae)

Copepoda 80

Cladocera 35

Ostracoda 3

Sphaeriidae 3 - Pelecypoda

unknown 5 unk. verm.

Oligochaeta 1479

LCR D25B01

9-29-91

Chironomidae 21
Ceratopogonidae 3
Nematoda 120
EPT 2 (one is odonata)
mites 4
Amphipoda 2
Cladocera 2
Copepoda 7
Oligochaetae 606
unknown 13 - unk. worm
Ostracoda 1

LCR 9/29/91
D26801

Sphaeriidae 45 - Pelecypoda
Amphipoda 43
Nematoda 1
Copepoda 2
Oligochaetae 3
Cladocera 5

LCR D27-B03 9-29-91

Amphipoda 81
Shrimp 1 - Mysid
Ostracoda 16
~~Sciaridae 1 (adult)~~ reject
Chironomidae pupae 1
mites 5
Copepoda 7
Nematoda 28
Oligochaeta 27
unknown 46 - unkn. vem.

LCR D28 B03
9/29/91

Amphipoda 167
Chironomidae 30 + 2 pupae
mites 3
Odonata 1
Sphaeriidae 1 - Pelecypoda
Copepoda 6
Cladocera 5
Ceratopogonidae 1
Ostracoda 1
Nematoda 190
Oligochaetae 262
Fish 1 ← not on inv. special sheet
unknown 3 - unk. worm.

LCR D29 B02 9-28-91

Amphipoda 92
Ostracoda 3
mites 2
Odonata 1
Chironomidae 5
Nematoda 57
Oligichaetae 27
unknown 5 - ant. worm

LCR D30 B03

Polychaetas 1
Copepoda 13+44 = 57
Chironomidae 10
Ceratopogonidae 2
misc. insects 5 (one is Odonata)
Amphipoda 5
Oligochaeta 655
Nematoda 101

LCR 831 B02 9/27/91

Chironomidae 29
Polychaetae 2
Leech 1 - Hirudinea
Oligochaetae 302
Sphaeriid clams 56 - Arthropoda
Ostracoda 3
Copepoda 10
Cladocera 1
Amphipoda 12
mites 5
Ceratopogonidae 1
EPT 1
Nematoda 31+42 = 73

LCR D32 B03 9-29-91

Chironomidae 2
Amphipoda 120
Cladocera 1
Polychaetae 1
Nematoda 8
? Barnacle 1 ✓ exotic ? Call in
Oligochaetae 5

LCR D33 B01 9/27/91

Oligochaetae 138
Chironomidae 11 + 1 pupa
Amphipoda 155
Sphaeriidae 38 - Pelecypoda
Nematoda 211
Ostracoda 8
Copepoda 4

LCR D34 B01 9/27/91

Nematoda 1
Ostracoda 2
~~Copepoda~~
Amphipoda 4
Chironomidae 4 + 1 pupa
Oligochaetae 4
~~Platyhelminthes 1~~ unk. worm

LCR D35B01 9/26/91

Leech 1 – Hirudinea
Amphipoda 13
Isopoda 1
Chironomidae 70 + 1 pupa
Ceratopogonidae 7
EPT 1
Mites 3
Nematoda 35
Ostracoda 23
Copepoda 46
Cladocera 5
~~Flatworms 3~~ 3 unk worm.
✓Tardigrade 1
Oligochaetae 1996

LCR D36 B01
9/26/91

Ostracoda 19
Sphaeriidae 75 - Pelecypoda
Chironomidae 30 + 2 pupae
mite 5
EPT 3
~~Hemiptera 1~~
Bivalve 1 - add to Pelecypoda
Amphipoda 1
Shrimp 1 - Mysid
Oligochaetae 40
Nematoda 29
unknown 2 unk. worm.

LCR D37 B01 no date

Oligochaetae 156
Amphipoda 27
Sphaeriidae 20 → Pelecypoda
Bivalve 1 ↗
Polychaetae 1
mites 2
Chironomidae 7
Flatworm 1 – Turbellaria
Ostracoda 1
Copepoda 1
Nematoda 53

LCR D38B03
9/25/91 TetraTech

Oligochaetal 7
Nematoda 1
Cerebratuligonudas 1 (specimen lost)

LCR D39B03 9/24/91

Sphaeriidae 29 - Pelecypoda
Chironomidae 3 + 1 pupa
Ceratopogonidae 1
Nematoda 1
Oligochaeta 2

LCR D40B01 9/24/71

Bivalve 1 – Pelecypoda
Amphipoda 6
Oligochaetae 3
Nematoda 3
Chironomidae 1
unknown 2 – unk. worm.