

**RESULTS OF ANALYSES OF BOTTOM FAUNA
IN COLLECTIONS FROM THE CLEARWATER AND SNAKE RIVERS**

September 15 – 17, 1952

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Division of Water Pollution Control
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The samples under discussion were collected by Mr. Leon Murphy of the Idaho Department of Fish and Game as a part of the third annual pollution investigation of the lower 12 miles of the Clearwater River and the Snake River above and below the point of confluence of the two rivers. Reference is made to the two previous investigations made by the Idaho Department of Public Health in cooperation with the Department of Fish and Game, the U. S. Fish and Wildlife Service, and the U. S. Public Health Service. Reports of these investigations have been issued and are on file at the offices of the participating agencies. The investigation in 1952 was conducted by the State Department of Public Health and, with active participation in the field, by the Idaho Department of Fish and Game.

The stations used for the investigation in 1952 are the same as on the previous investigation. Here as before, the north and south sides of most Clearwater and Lower Snake stations are designated separately for the purpose of more accurate interpretation. The square-foot bottom sampler was used in shallow riffles for collection of specimens of aquatic invertebrates as in previous investigations. Four to six square feet were sampled at each station with a total of 26 square feet covered on the Clearwater and six on the Snake River.

The summarized results of sample analyses are presented in Table I. Table II is the complete tabulation of organisms in the collections;

Figure 1 presents the material graphically in the form of pie diagrams. The results are interpreted as follows:

1. Sta. CL-12N, the upstream control station on the Clearwater, and S-128S, downstream on the Snake, had the highest productivity both in kinds of organisms and total weight per square foot of bottom area with 13 families, genera and species, and with 2.64 grams per sq. ft. at the former and 1.15 grams per square foot at the latter (Snake River).

2. Based on Davis' tentative standards of richness in productivity on stream bottoms, the Clearwater is rich at CL-12 and the Snake average at S-128. All the other points samples were under one gram per square foot or "poor" in productivity.

3. The most polluted stations indicated by the bottom fauna were CL-2.2S, CL-0.6S, and CL-0.0S. CL-2.2S was affected by sanitary and other wastes from Lindsay Creek as the collections were made immediately below the mouth of the creek.

4. In comparison to the situation in 1951, the effect of pollution this year (1952) is less severe with respect to the bottom fauna.

5. Observations on the physical condition of the stream bottom along the south side of the Clearwater have not been reported to this office, but presumably there was still some adverse effect manifest by fungus and algal growth. This is assumed in view of the consistently lower productivity on the south side compared with the north side of the Clearwater from Sta. CL-2.7 to the mouth.

6. The low productivity of the two square-foot samples from the lower Snake at S-128N is explained by excessive growths of algae coating the rocks and precluding most organisms except fly larvae.

7. As indicated in the report for 1950-51, stonefly nymphs are among the most sensitive organisms in the bottom fauna to adverse conditions created by pollution. It is, therefore, noteworthy that stoneflies are found in the Clearwater at Sta. 3.8 and 12 and in the Snake above and below the confluence of the Clearwater. None whatever were found along the Lewiston waterfront in the Clearwater. On the other hand, most of the pollution-tolerant sludge worms present in the samples were to be found in the samples collected along the Lewiston waterfront.

TABLE I. RESULTS OF ANALYSES OF BOTTOM FAUNA
September 15-17, 1952

Station No.	Number of Families Genera & Species	Weight Organisms ₂ Grams/ft.	Percent of Total Individual Organisms		
			Pollutational	Facultative	Cleaner
C1 - 12N*	13	2.64	0.5	8.0	91.5
C1 - 3.8N	6	Trace	0.0	70.	30
C1 - 2.7S**	6	Trace	2.5	88.	9.5
C1 - 2.2S	5	Trace	64.	36	0.0
C1 - 1.8N	9	0.78	0.0	51.	49.
C1 - 1.8S	6	0.1	6.5	81.	12.5
C1 - 0.6N	7	0.3	0.0	33.	66.
C1 - 0.6S	3	Trace	20.	60.	20.
C1 - 0.0N	3.	0.75	0.0	6.	94.
C1 - 0.0S	3	Trace	86.	14.	0.0
S - 135.7	11	0.88	0.0	58.	42.
S - 128N	2	Trace	0.0	100.	0.0
S - 128S	13	1.15	1.2	58.	40.8

* (N) = Near North Bank.

** (S) = Near South Bank.

FIGURE 1. BASIC DATA FOR PIE CHART ---- BOTTOM FAUNA

Station	Pollutional		Facultative		Cleaner	
	%	Deg.	%	Deg.	%	Deg.
C1 - 12N	0.5	1	8.	29	91.5	330
C1 - 3.8N	----		70	252	30.	108
C1 - 2.7S	2.5	9	88	316	9.5	35
C1 - 2.2S	64.	230	36	130	-----	
C1 - 1.8N	----		51	184	49.	176
C1 - 1.8S	6.5	23	81	290	12.5	47
C1 - 0.6N	----		33	122	66	238
C1 - 0.6S	20	72	60	216	20	72
C1 - 0.0N	0		6	22	94	338
C1 - 0.0S	86.	310	14.	50	-----	
S - 135.7			58	210	42	150
S - 128N	----		100	360	----	
S - 128S	1.2	3	58	210	40.8	147

TABLE II. BIOLOGICAL DATA -- BOTTOM FAUNA
CLEARWATER AND LOWER SNAKE RIVERS

(Numbers per square foot)

Organism	S t a t i o n s												
	Clearwater (Cl)										Snake (S)		
	12N	3.8N	2.7S	2.2S	1.9N	1.8S	0.6N	0.6S	0.0N	0.0S	135.7	128N	128S
<u>Caddis Fly Larvae</u>													
Brachycentrus sp.	16				24		5		41				
Hydropsychidae	127	4			16						4		16
Hydropsychidae--pupae													
Hydroptilidae	1												
Cecetis avara	1												
Polycentropus cinereus						1							
Rhyacophilidae					1								
<u>Mayfly Nymphs</u>													
Baetidae	1										1		5
Caenis sp.			0.3								1		
Heptagenidae	10	2			1						3		7
Paraleptaphlebia sp.											1		1
<u>Diptera--True flies</u>													
Bibliocephala sp.											1		
Geranomyia rostrata											1		
Hemerodromia sp.													1
Orthocladinae midges													
Other Tendipedidae (midges)	16	21	9	2	94	6	1	3	2	1	67	10	81
Tipulidae (craneflies)													
Simuliidae											12		
<u>Other Insects</u>													
Plecoptera (Stoneflies)	6	1											
Arcynopteryx parallela Frison	3	1											
Claassenia sabulosa (Bks.)	3				1								
Pteronarcys californica Newport											Present		Present
<u>Elmidae (Feetles)</u>													
Elmis sp.	1				1		2						

Table II. Biological Data--Bottom Fauna, Clearwater and Lower Snake Rivers --- Page 2

Organism	(Numbers per square foot)												
	S t a t i o n s												
	Clearwater (C1)										Snake (S)		
	12N	3.8N	2.7S	2.2S	1.8N	1.8S	0.6N	0.6S	0.0N	0.0S	135.7	128N	128S
<u>Other insects (Cont.)</u>													
Psephenus sp. (Water Penny)	—	1	0.3	—	—	—	—	—	—	—	—	—	—
Anisoptera (dragon fly)	—	—	—	—	—	—	—	—	—	—	—	—	—
Elophila sp. (aquatic moth)	16	2	0.3	—	4	1	2	1	1	—	48	—	41
<u>Oligochaete worms</u>													
Naididae	—	—	—	6	—	1	—	—	—	4	—	—	1
Limnodrilus sp.	—	—	0.3	2	—	—	—	—	—	—	—	—	—
Stylaria sp.	—	—	—	—	—	—	—	—	—	—	—	—	—
<u>Hirudinea--leeches</u>													
Glossiphonia complanata	—	—	—	1	—	—	—	—	—	—	—	—	—
Dina fervida	—	—	—	—	—	—	—	—	—	2	—	—	1
<u>Nemathelminthes--roundworms</u>													
Gordius sp.	—	—	—	—	1	1	—	—	—	—	—	—	1
<u>Mollusks--clams & snails</u>													
Fluminicola sp.	28	—	—	—	1	—	5	—	—	—	—	—	—
Ferrissia sp.	—	—	3	3	—	—	3	—	—	—	—	8	—
Sphaerium sp.	—	—	—	—	—	—	—	—	—	—	2	—	1
Ancylidae	—	—	—	—	—	6	—	—	—	—	—	—	—
Physa spp.	—	—	—	—	—	—	2	—	—	—	—	—	20
<u>Bryozoa (moss animalcules)</u>													
Plumatella sp.	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL	224	31	10.5	14	143	16	20	5	44	7	141	18	177
Weight in Grams/sq.ft.	2.64	Trace	Trace	Trace	0.78	0.1	0.3	Trace	0.75	Trace	0.88	Trace	1.15
Percent Pollutational	0.5	0.0	2.5	64	0.0	6.5	0.0	20	0.0	86	0.0	0.0	1.2