

AQUATIC INVERTEBRATES OF SOUTH BOULDER CREEK

Robert L. Newell

On July 12, 1980, several individuals and myself collected aquatic invertebrate samples from South Boulder Creek at the following locations: Station 1, near where the Mesa Trail begins about two miles upstream from Highway 93; Station 2, about 100 feet upstream from where the Creek flows under Highway 93; Station 3, about 100 yards downstream from Highway 93 where Marshall Road crosses the Creek; and Station 4 was located about 100 yards upstream from Baseline Road. Stations 1 and 2 are in the cold water fishery section and Stations 3 and 4 are in the warm water fishery section.

METHODS

All samples were collected using a kick net, an accepted method for qualitative studies of this nature. This net captures all but the smallest organisms which can pass through the net mesh. The net is approximately 3 feet wide and 3 feet high and is attached to wooden handles. The net is placed perpendicular to the current and an assistant kicks the bottom rocks upstream from the net and the current carries all dislodged organisms into the net. All habitats observed in each sampling station were sampled to ensure capture of most organisms living in the stream. All organisms and debris were placed in a jar, preserved with ethyl alcohol, labeled and stored for examination.

Approximately 10-15 feet of stream bottom were sampled at each collecting station. In the laboratory, small portions were examined under a dissecting microscope until the entire sample was examined. Through the microscope each organism was scanned and identified and a table was constructed that shows presence of organisms at each station. Organisms were identified to the lowest level or taxa practicable in the short time allowed, usually family, genus or species.

Summer is not the optimal season to sample aquatic organisms because many have emerged and the next generation is quite small and difficult to identify. The list of organisms found in this stream is probably much larger than the list presented. For purposes of comparison the samples are quite adequate. The purpose of these samples was to compare invertebrate populations in the cold water fishery and warm water fishery section.

RESULTS

A list of aquatic organisms found in South Boulder Creek is presented in Table 1. A total of 9 kinds of mayflies were identified. There was very little difference between the stations. All mayflies identified are typical trout stream mayflies and are found in all trout streams along the front range and on the west slope. All mayflies encountered are abundant in cool, clean trout streams. Some are famous to trout fishermen. Adults of Baetis are blue duns, adults of E. doddsi and E. grandis are green drakes, E. inermis is the pale morning dun, Epeorus is quill gordon and Paraleptophlebia is the blue quill. All of these mayflies can be found in trout streams throughout the Rocky Mountain region. The two species of mayfly collected in Station 1 and missing from Station 4 were Ameletus and E. doddsi. When the mayfly list is examined, it is evident that every species present in the cold water fishery section was collected in the warm water fishery section illustrating no major difference in the environment in the two sections.

Only four species of stoneflies were collected, three in the upper section and two in the lower section. For the genus Pteronarcella one adult only was collected at each of Stations 1 and 2. Many stonefly species emerge in the winter and spring which probably accounts for the small number of summer emergers collected during this study. Stoneflies are well known for their need of cold, well-oxygenated stream water.

Seven different genera of caddisflies were collected with each section illustrating a difference of only one genus each. One specimen of Oecetis was collected at Station 2 and

specimens of the unique Helicopsyche were collected at Stations 3 and 4. Larvae of Brachycentrus and Lepidostoma were extremely abundant at all stations. All caddisflies collected are common trout stream insects throughout the Rocky Mountains.

The Diptera or flies were represented by seven families none of which were abundant and all are found in mountain streams throughout the west. Generally when water quality decreases due to higher temperatures, low oxygen, the result is a high algae population followed by huge numbers of midges (chironomidae) and crane flies (Tipulidae) and Atheridae but this trend was not evident from these samples.

In the miscellaneous group were beetles of the family Elmidae or riffle beetles. This group is known for its high water quality requirements yet it was common at all collecting sites. Some dragonfly nymphs were collected at Stations 3 and 4 but this is probably indicative of the slower current rather than any other aspect. The other groups were quite rare throughout the stream.

A total of 23 taxa or kinds of aquatic invertebrates were collected from Stations 1 and 2, 20 from Station 3 and 21 from Station 4. Only minor differences exist between invertebrates communities at Stations 1 and 2 and Stations 3 and 4. The aquatic fauna at all sampling stations is typical Rocky Mountain trout stream fauna that I have collected in Montana, Idaho and Colorado.

It was evident that Station 4 has less flow than all other sampling stations yet it is presently sufficient to maintain a healthy invertebrate community. The stream is shaded by cottonwood trees throughout which help maintain cool water temperatures. The stream has a gradient that is sufficiently steep to maintain a rapid flow of water and to maintain a high oxygen content.

In my opinion there are no major differences between the aquatic invertebrate communities at the four sampling stations. The healthy populations of common trout stream insects indicates a

lack of any unnatural environmental stress. All sections of South Boulder Creek down to Baseline Road should have the same classification. The food supply is sufficient to maintain a large trout population. Both sections of the stream sampled should be classified as cold water fishery. In a time when water quality is decreasing throughout this country every effort should be made to upgrade stream classification whenever possible rather than to downgrade classification and accelerate the destruction of trout habitat.

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TABLE 1.

List of Aquatic Invertebrates
Collected from South Boulder Creek
July 12, 1980

x = present

INSECT/Invertebrates	STATION				
	1	2	3	4	
Mayflies:					
<u>Ameletus</u>	x		x		
<u>Baetis</u>	x	x	x	x	
<u>Ephemerella doddsi</u>	x		x		
<u>Ephemerella grandis</u>	x	x	x	x	
<u>Ephemerella inermis</u>	x	x	x	x	
<u>Ephemerella tibialis</u>	x	x		x	
<u>Epeorus</u>	x	x	x	x	
<u>Paraleptophlebia</u>	x	x	x	x	
<u>Rhithrogena</u>	x	x	x	x	
	TOTAL NUMBER:	9	7	8	7
Stoneflies:					
<u>Hesperoperla pacifica</u>	x	x			
<u>Isoperla</u>	x	x	x	x	
<u>Pteronarcella</u>	x	x			
<u>Chloroperlidae</u>			x	x	
	TOTAL NUMBER:	3	3	2	2
Caddisflies:					
<u>Agapetus</u>	x	x	x	x	
<u>Brachycentrus</u>	x	x	x	x	
<u>Glossosoma</u>	x	x	x	x	
<u>Helicopsyche</u>			x	x	
<u>Hydropsyche</u>	x	x		x	
<u>Lepidostoma</u>	x	x	x	x	
<u>Oecetis</u>		x			
	TOTAL NUMBER:	5	6	5	6
Diptera:					
Atheridae - <u>Atherix</u>	x	x	x		
Chironomidae	x	x	x	x	
Dolichopodidae		x			
Empididae				x	
Simuliidae	x				
Tanyderidae				x	
Tipulidae	x	x	x	x	
	TOTAL NUMBER:	4	4	3	4
Others:					
Odonata - Gomphidae			x	x	
Coleoptera - Elmidae	x	x	x	x	
Annelida - Tubificidae		x			
Mollusca - Pelecypoda		x			
Flatworms	x				
	TOTAL NUMBER:	2	3	2	2
	GRAND TOTAL:	23	23	20	21