

MONTANA STATE BOARD OF HEALTH
Div. of Environmental Sanitation
Field Investigation

August 9, 1963

Locality: Boulder River Drainage

On July 16 and 17, 1963, bottom fauna samples were collected from six stations in the Boulder River drainage. Portions of this area were sprayed with DDT in 1962 by the USFS for spruce budworm control. Bottom Fauna samples were collected before and after spraying, and a report written by Eugene Welch in 1962. In this report, Welch recommended that these stations be resampled in 1963 to determine recovery of aquatic fauna populations from spray effects, and if particular orders of insects were slower than others in recovery.

Bottom fauna data collected in 1962 and 1963 are presented in Table 1. The 1962 samples were collected just a few days prior to spraying, and the 1963 collections were made approximately one year later. Stations I and II were control stations, Stations III and IV were in the immediate spray area, and Stations V and VI were downstream from spray areas. Station VI was added in 1963 because, although Basin Creek is the water supply for Basin, Montana, drift samples indicated that heavy mortality of insects occurred as a result of spraying DDT.

The only significant decrease in the per cent of total pollution sensitive organisms occurred at Station I, a control station. At the time of the 1963 sampling, it was apparent from the amount of aquatic vegetation present, that Bison Creek was receiving a loading of organic nutrients. The area above Station I is meadow and irrigated ranch land, which could account for organic enrichment by agricultural fertilizers in irrigation return waters.

At Stations III and V, tricoptera show a significant decrease in numbers and per cent from 1962. Welch noted in his report that the substrate of the Little Boulder River "was covered with tricoptera cases of the genus Brachycentrus", following spraying. It is likely that the most detrimental effects of DDT, as far recovery, occurred to this group of insects.

Respectfully submitted,

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Attachment

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- Mr. C. W. Brinck, State Board of Health
- Mr. Eugene Welch, Wash. State University, Seattle

RWB:mr

TABLE 1. Numbers and Per Cent of Aquatic Organisms Collected* Before DDT Spraying and One Year Later, Boulder River Drainage, 1962-63.

	Date	Ephemeroptera	Plecoptera	Tricoptera	Coleoptera	Diptera	Oligochaeta	Other	Total	Per Cent Sensitive Organisms
Station I, (CONTROL) Bison Creek at Elk Park	6-25-62	158 47%	1	81 24%	2 1%	93 28%			335	71%
	7-16-63	42 12%		31 9%	9 3%	261 74%	7 2%		350	21%
Station II, (CONTROL) Boulder Cr. at Whitehorse Camp	6-25-62	130 46%	13 5%	111 39%	16 6%	14 4%			284	90%
	7-16-63	93 29%	13 4%	140 43%	20 6%	37 11%	1	21 6%	325	76%
Station III, Boulder River at Indianhead Rock	6-25-62	124 21%	3 1%	249 43%	100 17%	89 18%	1		566	67%
	7-16-63	82 37%	13 6%	52 23%	36 16%	35 16%	5 2%		223	66%
Station IV, Boulder River at Rock House	6-25-62	9 45%		3 15%		8 40%			20	60%
	7-17-63	16 29%	16 29%	5 9%	1 2%	17 31%			55	67%
Station V, Little Boulder River	6-25-62	56 17%	12 4%	207 63%	18 5%	30 9%	5 2%		410 328	74%
	7-17-63	62 19%	161 50%	5 1%	1	93 29%	2 1%		324	70%
Station VI, Boulder River Below Boulder	6-25-62	5 13%	5 13%	19 47%	1 2%	10 25%			40	72%
	7-17-63	67 21%	112 36%	93 30%		35 11%	2 1%	4 1%	313	88%
Station VII, Basin Creek above water supply	7-17-63	14 39%	7 19%	8 22%	1 3%	6 16%			36	81%

*All 8 sq. ft. samples except Station VII, which was 4 sq. ft.