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*The Effect of Reservoirs on the Biodiversity of Aquatic Invertebrates in Cold Water Fisheries*

I studied the biodiversity of aquatic invertebrates in rivers above and below large reservoirs throughout Colorado and northern New Mexico. Aquatic invertebrates were collected from approximately 1 square meter river bottom where rocks ranging from 5 cm to 30 cm were hand rubbed using the current to wash invertebrates into a 500 micron, modified rectangular kick-net. Aquatic invertebrate samples were taken in reaches of river located 300 meters to 600 meters above and below each reservoir. A total of 36 samples were collected from 6 river reaches where 2 samples were taken from each of the 3 riffles comprising 1 river reach. A total of 1,761 aquatic invertebrates were sorted from randomly selected grids of a sorting pan. A dissecting microscope and field identification keys were used to identify aquatic invertebrates down to family or genus and species when possible. Species Richness (the number of species per sample) and Shannon-Weiner Index (statistical test for even representation of individuals and species comprising each sample) was used to analyze data. Species Richness for river reaches above reservoirs was 310% greater than river reaches below reservoirs. Shannon-Weiner Index for river reaches above reservoirs was 160% greater than length of aquatic invertebrates from river reaches below reservoirs. These indicate that the biodiversity of aquatic invertebrates was far greater above reservoirs than below. These astonishing results must play a critical role when considering future reservoir projects.