

**Invertebrate Density  
Survey Report on  
the Lower Reservoir  
of Blenheim-Gilboa**

by,  
Todd Harmon  
Ron Eberts  
Bruce Ryan  
SUNY Cobleskill  
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## Invertebrate Density Survey Report on the Lower Reservoir of Blenheim-Gilboa

**Abstract:** There was a total of 24 inverts found and 93 planktors were collected during the survey. If compared to other lakes and resevoirs, the total biomass of inverts and abundance of plankton should be much higher. A ponar grab and kemmer bottle were the basic equipment used to collect the samples. The lower resevoir at Blenheim-Gilboa appears to consist of a mostly rocky basin with clay substrate near and around shore lines.

### Introduction

The environmentalist at the N.Y. Power Authority has asked the fisheries class at SUNY Cobleskill to conduct studies on the lower resevoir at Blenheim-Gilboa. From those studies the fisheries class will try to determine the best fish suitable for stocking in the lower resevoir. Our group is conducting a study of the invertebrates at the resevoir. Invertebrate populations are a major food for many young fish.

In 1974-1975 Terry R. Culp conducted various studies at the Blenheim-Gilboa resevoir, and one of these studies was about invertebrate populations. The existing knowledge provided within this journal indicates that June had the highest numerical density, May had the largest biomass density, and September had the least in biomass and density. With the most common taxa being: Chironomidae, Oligochaeta, Hexagenia, Oecetis, and Gammarus (Culp, 1977).

The goal of this is to determine the density and the kinds of invertebrates at different locations within the resevoir. This data will be compared to previous studies of Culp as well as others.

### Materials and Methods

The invertebrate studies were conducted at the Blenheim-Gilboa Storage Project. The coordinates are latitude, 27 feet, 30 seconds and longitude at 42 degrees, 26 feet, 30 seconds located in Schoharie county in the township of Blenheim in New York State (U.S.G.S. map, Blenheim quadrangle). The resevoirs are located on and just below Brown Mountain, with the upper resevoir being about 1000 feet higher (Power.Authority, 1973).

Studies for inverts were conducted during the 12th, 19th, and 26th of April, 1991. On April 12th the weather was about 40 degrees and cloudy. On the 19th it was sunny and 60 degrees, and on the 26th the weather was sunny and 70 degrees. On all three days the water was rising at a rapid pace.

On April 12th and 26th zooplanktors were sampled in the center of the lower resevoir at every five meters using a kemmer bottle. Samples were poured through a number 20 mesh plankton cup. Samples were preserved in a solution of ethanol and rose bengal. The planktors were later identified and counted by the use of microscopes.

On April 19th the Ponar grab was used to sample benthic invertebrates. The ponar grab was used to take samples at 1,3,5,7,and 9 meters. These samples were put in quart jars with rose-bengal. When back to the lab, the inverts were sieved to be easier to find.

On April 26th a Ponar grab was used to take samples at 2,5,8,12, and 15 meters. These samples were put in bags, and the inverts were again sieved out.

On April 19th a shore survey was conducted, in which rocks in the Eulitoral zone were turned over and examined for invetebrates.

## Results

### Invertebrate Analysis:

There was a total of 24 inverts which was made up of three taxa. Twenty-two belonged to the taxa Oligochaeta, one to the taxa Choronomid, one to the taxa Hexagenia, and one worm that was never identified was found during the shore survey. Total biomass for the Oligochaeta was .18 grams; Choronomid was .02 grams, and total biomass for the taxa Hexagenia was .08 grams.

<u>Depth</u>	<u>Species found</u>	<u>Biomass(per/m2)</u>
1 meter	Choronomid	.02 grams
2m.	Rocky Substrate	-----
3m.	Hard Clay Substrate	-----
5m.	Oligochaeta	.05 g.
7m.	Oligochaeta	.02 g.
8m.	Oligochaeta	.04 g.
9m.	Oligochaeta	.05 g.
12m.	Hexagenia	.08 g.
15m.	-----	-----

### Plankton Analysis:

There was a total of 93 planktors and three different species of plankton. Fifty-four of them were Cladocerans, thirty-six of them were Rotifers and three of them were Copepods.

<u>Depth</u>	<u>Species found</u>	<u>Total # (per/liter)</u>
Surface	Cladocerans	20
5 meters	Rotifers	7
5m.	Copepod	6
10m.	Cladocerans	27
10m.	Rotifers	26
10m.	Copepods	2

### Substrate Characteristics:

It appears that the deeper the resevoir gets--the softer the substrate becomes. While conducting our studies there problems concerning the resevoirs rocky basin and often ran into areas of the resevoir where hard clay substrate existed. The water level fluctuates daily and the substrate might be covered with water in the afternoon and evening and uncovered in the early morning hours.

In most sample locations the substrate was so rocky that the ponar grab wouldn't pick up a sample. It took awhile to finally find a few locations where it was possible to collect good samples of muddy substrate. (Refer to map at end of report)

### Discussion

Most of the invertebrates were in the taxa Oligochaeta, which are small worm-like creatures. When evaluating spartial distribution, attention must be given to the influence of substrate texture since it appears that several "Eutrophic" indicator species among the Oligochaeta prefer muddy sediments (Barton, 1989). Being that over 65% of the total biomass from the inverts collected were Oligochaets, we can probally conclude that Oligochaets are of the highest density of inverts found within the lower resevoir.

Most of the invertebrates were collected between 5 and 10 meters. There are many fators that contribute to this. Factors determing the distribution of invert populations include: food supply, substrate, current, competition for space and predation (Cummings 1975). It is apparent that not many inverts were collected between 1 and 3 meters because of the fluctuations of the water level.

Our studies compare some what the same to Culp's study from the mid 70's, if anything the invert levels are decreasing slightly. If compared to other lakes and resevoirs, the total biomass of inverts and abundance of plankton should be much higher.

### Conclusion

Very few invertebrates were found in the samples. The

variety of the species present were not really good. The fish that would be introduced to stocking here should not have to depend on inverts for a major part of their diet (ex. catfish).

As compared to the data of the last known studies on the invertebrates in the lower reservoir was conducted in 1976-1978 by T.R. Culp. This data indicated higher densities and more invert species as compared to our study, this could be due to the time of year Culp studies were done as compared to when ours were done, because such things as plankton blossom and decrease at different times of the year.

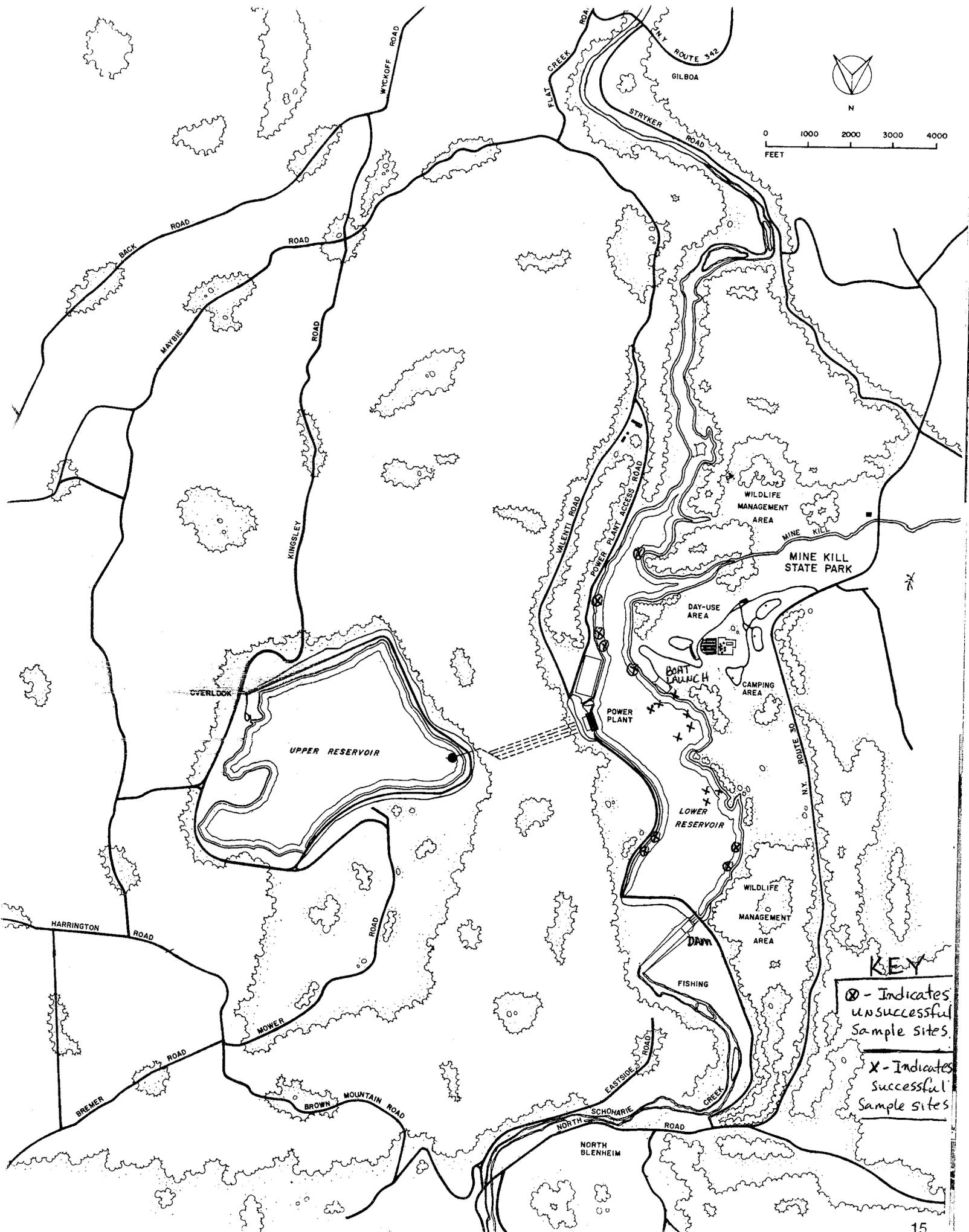
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**KEY**

⊗ - Indicates unsuccessful sample sites.

X - Indicates successful sample sites.