

Zooplankton Populations of Several New Jersey Lakes



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Abstract

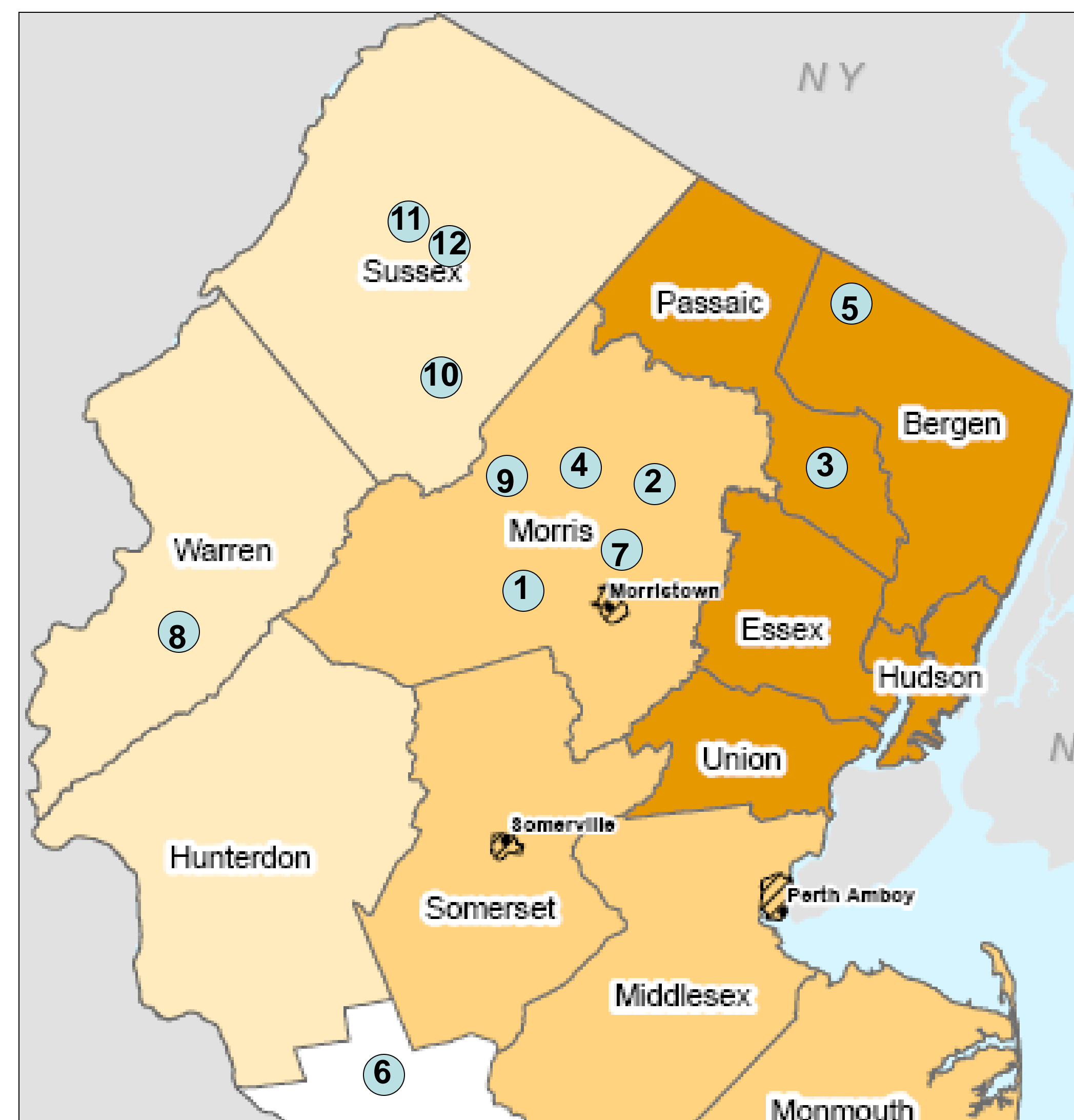
For my Senior Project I wanted to shadow a Biologist, as part of my career interest. I contacted Allied Biological, a Lake Management company, who set up a research study on Zooplankton for me to conduct. Before I could take part in this project I had to obtain my NJ Boating Safety certification in order to conduct sampling. Part of the research was to compare the seasonal Zooplankton populations of the lakes in 2010. Zooplankton, animal-like microorganisms, are an important part of lake ecology and are the basis of the aquatic food chain. They are the consumers of phytoplankton, plant-like plankton most commonly known as Algae, and other zooplankton. Zooplankton are preyed on by juvenile game fish and forage fish.

Senior Project Goals

- Shadowing Biologist
- New Jersey Boating Safety Certification
- Academic Research on Zooplankton Ecology
- Field Sampling Techniques
- Microscope Usage and Care
- Zooplankton Identification
- Scientific Data Recording
- Scientific Data Entry of Tables and Graphs



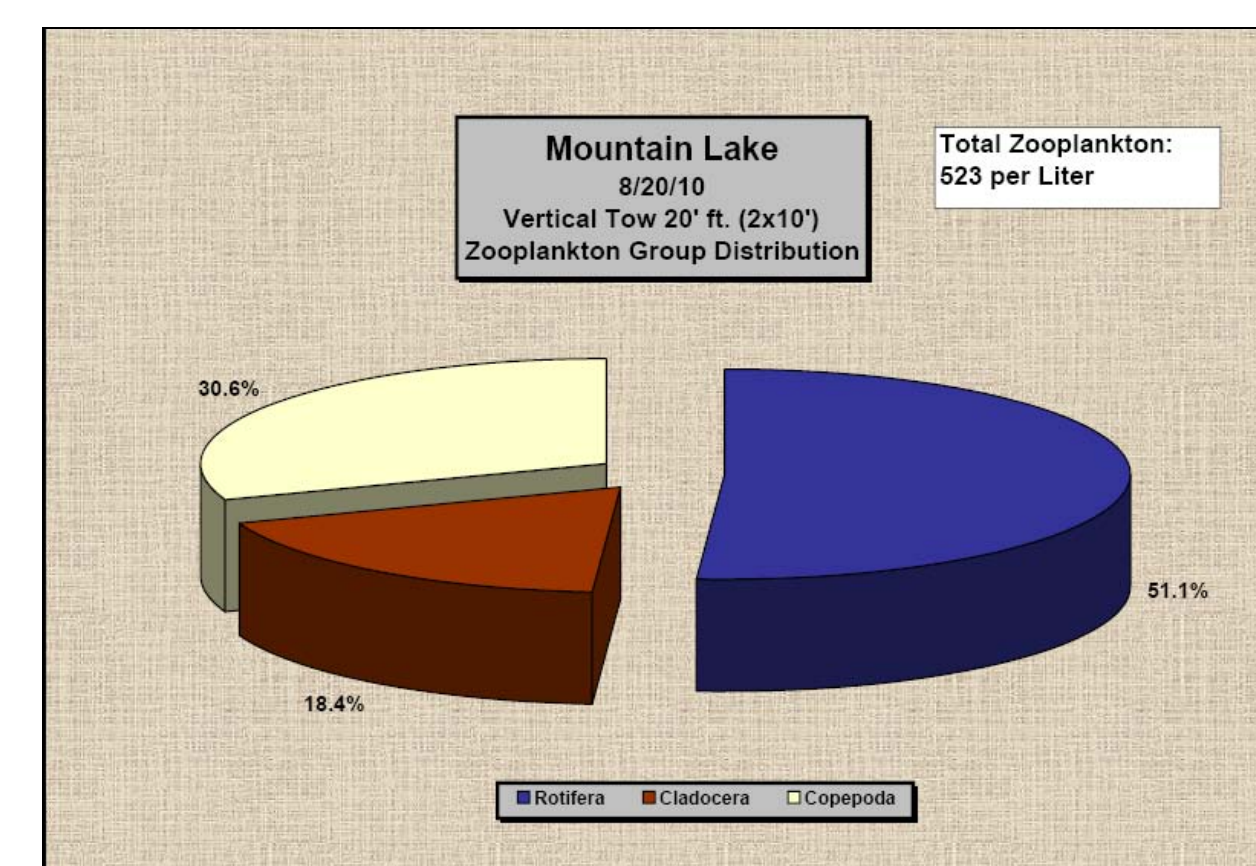
Northern Lakes of New Jersey



2010 Zooplankton Project Site Summary

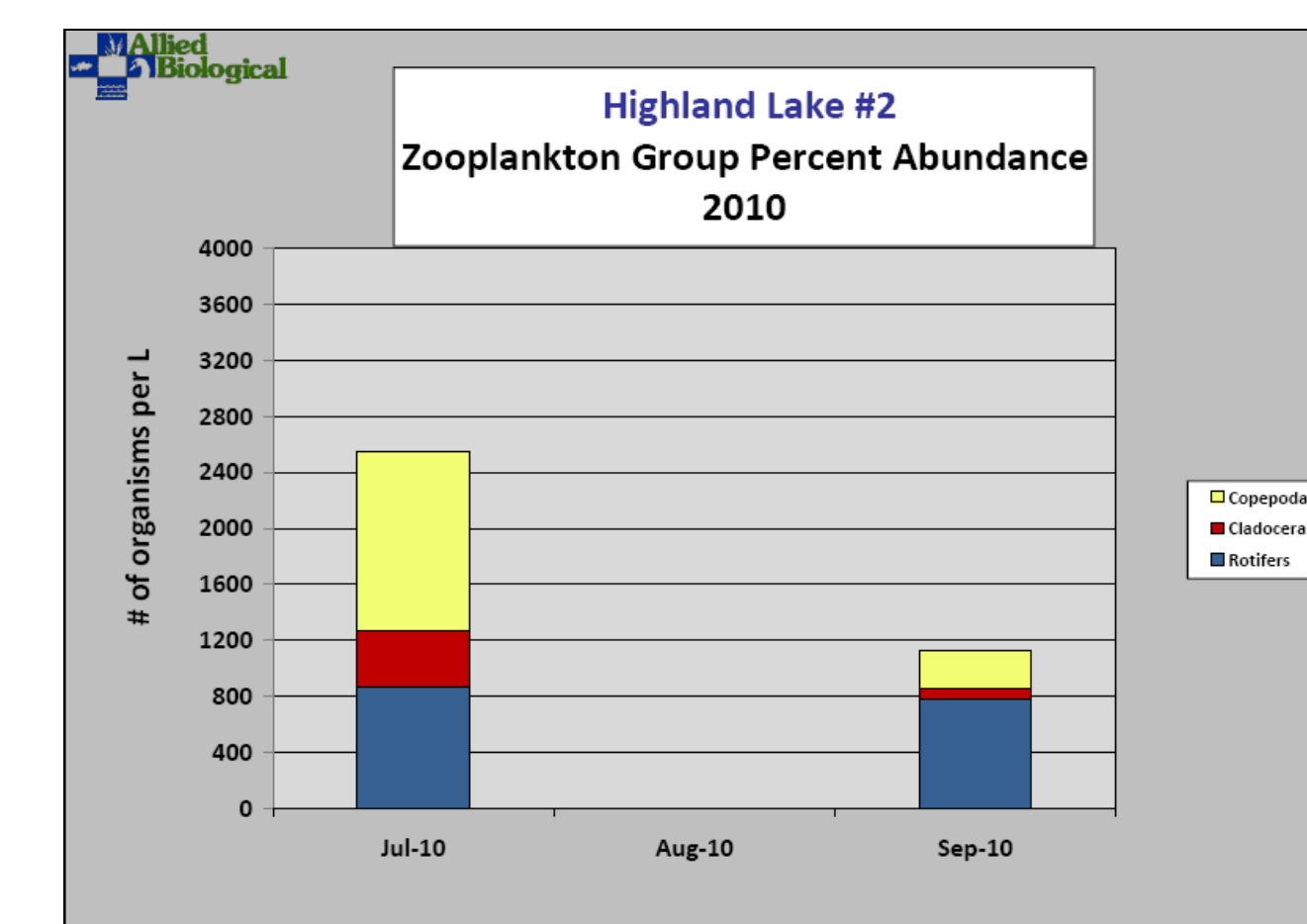
#	Lake	Date #1	Zooplankton per/L	Dominate Group	Date #2	Zooplankton per/L	Dominate Group
1	ESL	7/16/10	1,088	Rotifers	9/20/10	25	Rotifers
2	WWL	7/16/10	10	Rotifers & Cladocera	8/20/10	55	Rotifers
3	PKL	7/16/10	1,433	Copepoda	8/20/10	73	Cladocera
4	WFL	7/19/10	3,670	Rotifers	9/20/10	167	Rotifers
5	CL	8/2/10	5,786	Rotifers	8/27/10	2,278	Rotifers
6	CPL	8/24/10	104	Rotifers	9/23/10	2,917	Copepoda
7	MLM	7/16/10	1,433	Rotifers	8/20/10	523	Rotifers
8	MLL	8/5/10	3,021	Copepoda	9/21/10	288	Copepoda
9	LKN	7/19/10	1,724	Rotifers	9/20/10	1,078	Rotifers
10	FHL	7/30/10	3,673	Rotifers	9/17/10	519	Copepoda
11	HL2	7/30/10	2,544	Copepoda	9/17/10	1,123	Rotifers
12	HL4	7/30/10	11,072	Rotifers	9/17/10	1,569	Cladocera

Sample Zooplankton Abundance Graphs

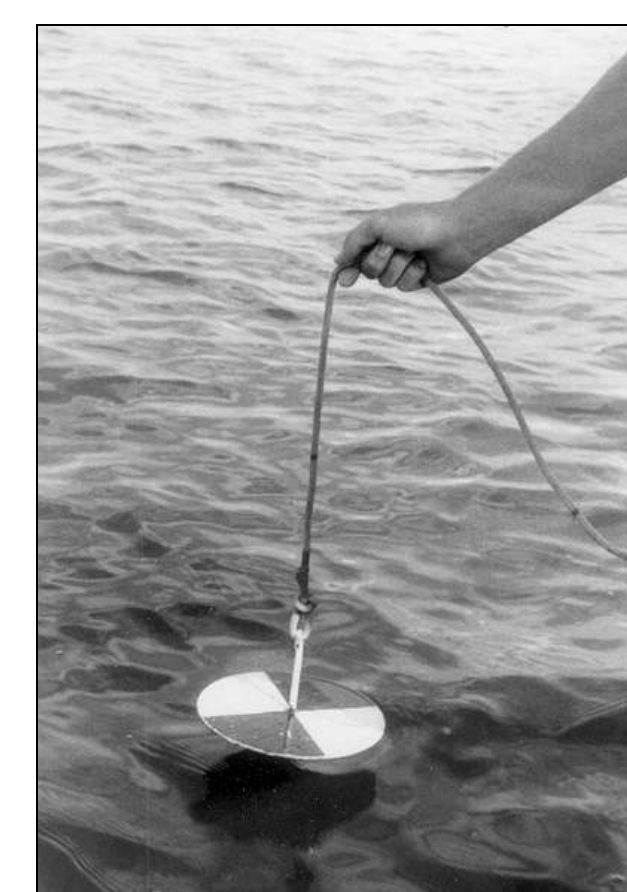


The pie chart shows the distributions of each group. Zooplankton are classified into three groups Copepods, Rotifers, and Cladocera. This pie chart shows a high abundance of Rotifers.

The Bar graph shows the group percentage abundance and the overall abundance during both sampling events.



Equipment



- An Image-Based Key to the Zooplankton of the Northeast (USA)
- Wisconsin Style Plankton Net (80 um)
- Water Chemistry Kits
- Secchi Disk
- Compound Microscope
- Microsoft Excel & PowerPoint
- 14 foot Aluminum Survey Boat
- Sedgwick Rafter Counting Cell
- Temperature/Dissolved Oxygen Meter
- Sample Bottles and Pipettes



Study Goals

- Seasonal comparison of Zooplankton abundance and diversity at several lakes in New Jersey.
- Establish baseline zooplankton populations at sample sites.
- To compare horizontal versus vertical sampling techniques to collect zooplankton abundance.
- Confirm that invasive zooplankton, such as Spiny Water Flea and Fishhook Water Flea, were not present at any of the sampling sites.
- A Community Outreach Program in assisting a Hackettstown High School student with her Senior Project.



Study Findings

2010 Sites Dominated by Rotifers

Lake	Date	Percentage
ESL	7/16/10	86.1%
WWL	7/16/10	50.0%
MLM	7/16/10	39.3%
WFL	7/16/10	77.5%
LKN	7/19/10	73.5%
FHL	7/30/10	85.7%
HL4	7/30/10	89.3%
CL	8/2/10	54.0%
ESL	9/20/10	60.0%
MLM	8/20/10	51.5%
WWL	8/20/10	72.7%
CPL	8/24/10	80.8%
CL	8/27/10	76.4%
HL2	9/17/10	69.0%
LKN	9/20/10	59.5%
WFL	9/20/10	50.3%

- Variation is shown in Zooplankton abundance and diversity among the dates and sites.
- WWL had a low zooplankton abundance on both dates. This did not correspond with algaecide use or plant growth late of 2010.
- As expected, zooplankton abundance was higher at ten sites during the first sampling in July.
- Sites that were dominated by Cladocera or Copepods were PKL, CPL, MLL, FHL, HL2, and HL4.
- There was no difference found in collecting horizontal tows versus vertical tows.
- No invasive zooplankton were observed in any of the 12 lakes.



References

An Image-Based Key To The Zooplankton Of The Northeast (USA) Version 2.0
 Pennak, R.W. 1978. Freshwater Invertebrates of the United States. Second Edition. A Wiley- Interscience Publication. New York. 803 pp.

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