Historical summary of chemical and physical parameters for Conesus Lake. N.D. means not detectable. The 1973 transparency and nitrate-N measurements are integrated samples from the upper 10 meters while the remaining 1973 parameters were taken from surface and bottom samples on 22 April, 17 July and 28 August. The 1985 sampling period was for one year. Samples of 1988 were collected 1 May through 31 October.

Year		pH	Conductivity umhos/cm	Ca^{++} mg/l	Mg^{++} mg/l	Na^{+} mg/l	K^{+} mg/l	Transparency Secchi (m)	CL^{-} mg/l Cl	SO_4^{--} mg/l SO_4	NO_3-NO_2 mg/l NO_3-N	Alkalinity mg/l $CaCO_3$
1910[1]								6.3	11.25			100
Before 1963[2]		7.7	309	40	11	9.4		6.4	13	31	0.239	108.2
1971[3]	epilimnion	8.4		44					27.1		0.051	99.8
	hypolimnion	7.7		53					27.4		0.008	107.9
1972[4]		8.1	339					4.7			0.02-0.04	118
1973[5]		8.2	330	41	13.2	12.2	2.6	3.5	29.4	27.8	0.046-0.145	118
1985[6]	epilimnion	8.1	369	39	12	17	2.6	3.1	29.2	24.4	N.D.-0.040	117.0
	metalimnion	8.0	372	39	12	17	2.6		29.1	24.7	N.D.-0.069	117.5
	hypolimnion	7.9	377	40	12	17	2.6		29.0	25.2	N.D.-0.062	121.0
1988	epilimnion	8.4	381	33	11.2	16.7	2.2	3.1	30.2	23.7	N.D.- .09	113.4
	metalimnion	8.2	381	35	11.5	16.3	2.1		30.9	23.2	N.D.- .09	116.8
	hypolimnion	7.7	392	36	11.3	15.9	2.1		30.2	22.7	N.D.- .06	124.4

1 Birge and Juday(1914;1921).
2 Berg(1966).
3 Godfrey in Forest et al.(1978).
4 USEPA(1974).
5 Mills(1975).
6 Makarewicz(1986).

CONCLUSIONS

Since the 3-5 cm fingerling stockings were unsuccessful and the planktivorous fry have abundant hiding places, the planktivores have continued to flourish within Conesus Lake. During these years, too many planktivores have decimated the large zooplankton, creating conditions favorable for increased algae mass, higher turbidity levels and small size zooplankton.

The objectives of this study were:

1. To obtain water chemistry during May-October 1988 and compare to previous work;

2. To obtain zooplankton data and evaluate size-selective changes due to biomanipulation;

3. To complete a fish census of piscivores and planktivores; and

4. To determine feeding habits of Conesus Lake alewife.

The results indicate that Conesus Lake water quality remained the same, except for those water quality criteria in which algae and small-size zooplankton were involved. Turbidity, chlorophyll a, pH and SRP have increased significantly within the epilimnion -the area of highest biologic activity- from 1985 to 1988.

The 1988 zooplankton were smaller in size, having a weighted mean length of 0.18 mm compared to a 1985 weighted mean length of 0.23 mm and a 1972-73 mean length of 0.60 mm. Ninety-eight percent of the 1988 zooplankton were less than 0.35 mm in size, and 93% of the crustacean zooplankton were less than 0.35 mm. Zooplankton biomass had decreased in 1988 to one-half the biomass of 1985.

The 1985 zooplankton were a Rotifera-Eucopepoda (calanoid and cyclopoids)-Cladocera community. By 1988 the community changed to Rotifera-Cladocera-Eucopepoda (cyclopoids). The disappearance of the large calanoid Eucopepoda Diaptomus and the appearance of Eucyclops agilis and Macrocyclops albidus, were unexpected in the pelagic waters of Conesus Lake.

From 1985 to 1988, yellow perch increased 30%, walleye increased 8%, small mouth bass increased 3%, pike remained unchanged and alewife decreased 41%. The 1988 yellow perch consisted of jack perch and healthy smaller perch, with two sizes, 160-179 mm and 260-279 mm, being predominant. Alewife decreased in weight from 1985 to 1988, weighing 32-119 gm and 16-40 gm, respectively. Planktivore population declined by 12% since 1985, the most likely cause being a lack of a forage base for the planktivores, especially the alewifes.

In 1988, the Conesus Lake alewife fed on Mesocyclops edax 99% of the time, preferring M. edax that were 1.0 mm or greater in size. Those M. edax which were 1.0 mm or larger in size constituted 0.016% of the total zooplankton community. Thus the alewife were suffering from a dwindling food base.

There are no quick solutions toward improving Conesus Lake. If the alewife were fully controlled by the summer of 1989, based on water replenishment calculations, the lake could be expected to show initial signs of recovery by the fall of 1990 with definite improvement by the summer of 1991 (Edmondson and Lehman 1981; Stewart and Markello 1974). The reappearance of Diaptomus species would be expected along with an increase in size and abundance of Mesocyclops edax and Cyclops bicuspidatus thomasi. The reappearance of Daphnia pulex would indicate a desirable change within the zooplankton community. Bosmina longirostris and Ceriodaphnia reticulata would be expected to have fewer numbers and be larger in size. Chlorophyll a levels should decline along with lower turbidity readings. Water clarity could improve, but any additional transparency will stimulate macrophyte growth.

Suggestions of further work and areas of investigation for Conesus Lake are:

1. Implement a moratorium on all walleye fishing for two years. This would help establish the 7500 (10.16 cm) walleye fingerlings stocked August 1988. With such a low food base now present in the lake for the alewifes, a die-off is likely and the newly stocked walleye would have a better

chance to impede future alewife growth.

2. Stop the sale of alewife minnows in all bait shops within upstate New York (the Finger Lakes region, Lakes Erie and Ontario). Continuing sales of alewife minnows increases the imbalance in trophic levels.

3. Identify and enumerate the phytoplankton assemblages of 1985 and 1988.

4. Sample Conesus Lake for water chemistry and the zooplankton community in 1991. DEC plans a gill net census of Conesus Lake every three years, which would be 1991. This study is for the next graduate student who loves a challenge.