

2004



Conesus Lake and Watershed Report Card

Assessment of the Conesus Lake Watershed
Management Plan in 2004

Conesus Lake Watershed Council

February 24, 2005



PURPOSE OF THIS DOCUMENT

One of the recommendations of the Conesus Lake Watershed Management Plan (CLWMP) is to prepare an annual update summarizing the status of activities in the watershed designed to reduce nonpoint source pollution. In addition, the annual summary provides a forum for tracking water quality conditions in Conesus Lake and highlighting new information.



MAJOR ACCOMPLISHMENTS

Since completion of the CLWMP in 2003, the Livingston County Planning Department and the Board of Supervisors have taken steps to implement the plan's recommendations. The first step was forming the Conesus Lake Watershed Council. The Watershed Council was created in December 2003. Nine watershed partners: three Villages, five Towns, and Livingston County signed an Intermunicipal Agreement to implement the recommendations of the CLWMP. The Watershed Council met quarterly in 2004 and made significant progress on several CLWMP initiatives.

- A Watershed Manager was appointed to assist the Planning Department with implementing the CLWMP. Don Wetzel, a resident of Livonia, is contracting with Livingston County to provide professional services.
- The Watershed Council and the Livingston County Board of Supervisors authorized a detailed analysis of the feasibility, benefits, and costs of an alum treatment program to reduce phosphorus and algae in Conesus Lake. EcoLogic LLC of Cazenovia completed a feasibility analysis and Draft Environmental Impact Statement (DEIS) for this lake restoration alternative. The analysis demonstrated that an alum treatment program would be an environmentally safe and effective means of reducing phosphorus and algae. The State Environmental Quality Review (SEQR) process was followed to ensure public input, and the Final EIS was approved by the Board of Supervisors in December 2004 following review and comment.
- A booklet on watershed stewardship issues was published late in 2004. Watershed Manager Don Wetzel directed this effort to provide information to all watershed residents and users of Conesus Lake. Copies are available from the Conesus Lake Watershed Manager, Livingston County Office Building Room 305 phone 585-243-7917.

- The Towns of Conesus and Sparta submitted an application for funding to the NYS Environmental Protection Fund. Monies obtained through this grant would be used for road ditch repair and maintenance work. As of the date of this Report Card, the application is pending.
- A cooperative walleye rearing program was initiated in 2004 between the Finger Lakes Community College (FLCC), New York State Department of Environmental Conservation (NYSDEC), and the Conesus Lake Association (CLA). Walleye rearing ponds were constructed on the grounds of the FLCC. These ponds are used to grow young walleye from the fry stage to the fingerling stage in a protected environment. Stocking older, larger fingerling walleye in Conesus Lake helps the survival of the fish, as larger fish are better able to avoid predation.

One of the recommendations for improving water clarity in Conesus Lake is to increase the walleye population. Walleye are an important native fish that, if present in high enough numbers, could reduce the population of the alewife. The alewife is an invasive species that has brought about changes in the lake's food web that have made the lake more prone to algal blooms and turbid water.

- The Conesus Lake Association conducted a pilot program for pickup of aquatic vegetation (weeds) removed from Conesus Lake. The pilot program was held in August 2004 and met with mixed success. The CLA has identified several factors that would improve the program prior to its full-scale implementation.

PART A: CONESUS LAKE WATER QUALITY STATUS UPDATE

Weed growth

Visual observations and community comments indicate that weed growth continues to be a major issue affecting recreational use of Conesus Lake. Dr. Sid Bosch (SUNY Geneseo) continued his program of detailed measurements of the type and abundance of macrophytes at defined beds of dense vegetation located around the lake.

Algae and water clarity

Recent data indicate that summer phosphorus levels, algal abundance, and water clarity continue to be problematic (Figures 1-3). The lake was placed on State and Federal lists of impaired waters in 2004, indicating that water quality conditions now threaten the lake's use for recreation and water supply.

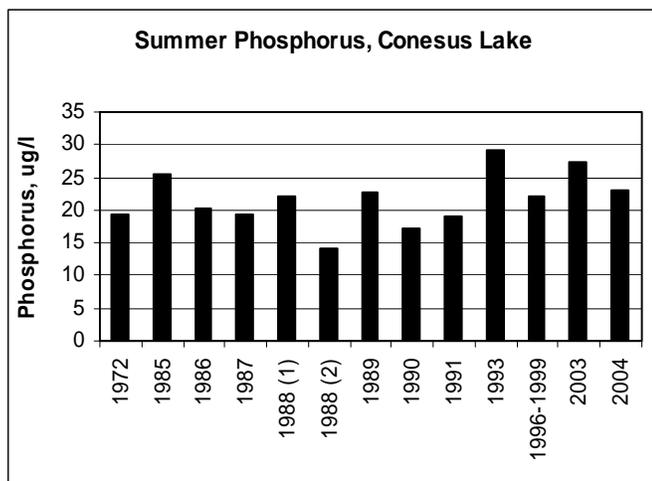


Figure 1. Average total phosphorus measured in summer (June-August) in the upper waters of Conesus Lake. NYSDEC uses 20 $\mu\text{g/l}$ (summer average, upper waters) as the threshold for impaired waters. When phosphorus concentrations exceed this level there is a risk of algal blooms. Concentrations in 2004 are above this threshold, indicating the need for additional controls on phosphorus loading. Total P has been over the 20 $\mu\text{g/l}$ threshold for more than a decade.

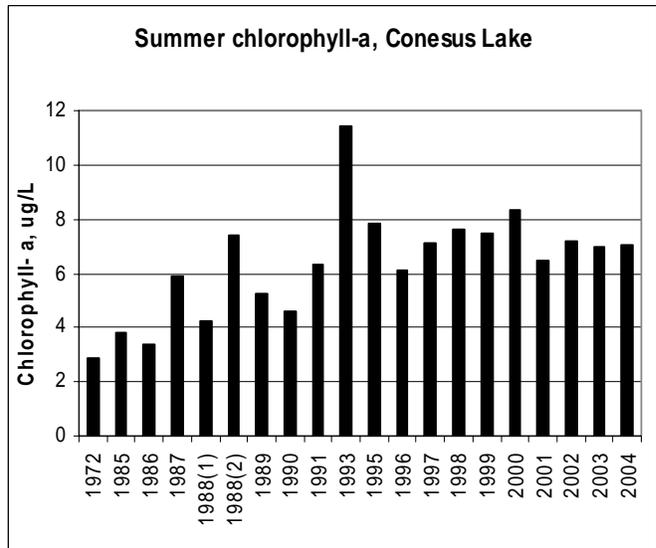


Figure 2. Average chlorophyll-a levels measured during summer (June-August) in surface waters of Conesus Lake. Summer average chlorophyll-a concentrations are a good indicator of the abundance of algae suspended in the open waters; these tiny plants make the water appear green. Chlorophyll-a concentrations have been relatively stable over the past decade, and are substantially higher than values measured in the early 1970s.

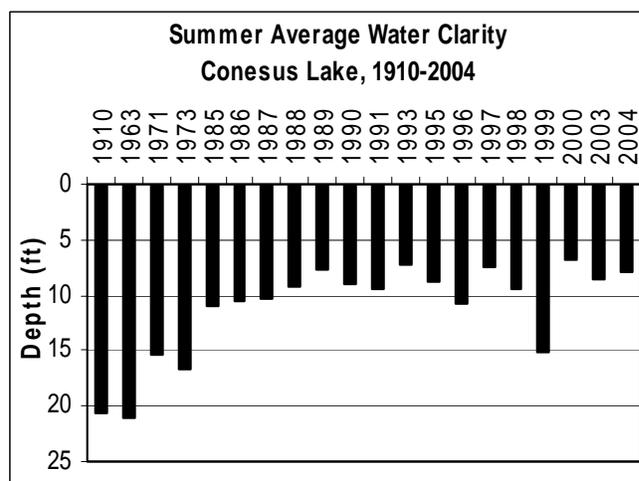


Figure 3. Bars indicate average depth to which a Secchi disk was visible during summer months (June-August). Water clarity remains variable from year to year. The 2004 data are within the range of measurements in recent years. This is consistent with the chlorophyll-a results, suggesting that algae are the major factor affecting the clarity of Conesus Lake.

Sedimentation

Since August 2002, investigators have made weekly measurements of streamflow and the loss of nutrients and sediment at seven watershed locations. This program is part of the USDA research program led by Dr. Joseph Makarewicz (SUNY Brockport) and Dr. Sid Bosch (SUNY Geneseo). The monitoring program continues to highlight areas of concern. Lakeshore towns have taken steps to control sedimentation from development projects by adopting sedimentation and erosion control laws.

Increasing sodium and chloride (salt) concentrations

Sodium and chloride concentrations in Conesus Lake have steadily increased as the watershed developed. Salt levels measured at the water intakes confirm that these concentrations continue to rise. Efforts are underway to control road salt. As of 2004, all salt piles in the watershed are covered.

Fisheries

Biologists from NYSDEC Region 8 conducted a Fish Stock Assessment Survey in September 2004. These surveys are conducted at three-year intervals. A total of 783 fish comprising 12 species were caught. Bluegill, pumpkinseed, rock bass, and brown bullhead made up the majority of the catch. According to NYSDEC Biologist Web Pearsall, fewer alewives were caught during the 2004 survey than in 2001 or 1998. A total of 102 walleyes were caught; 42 were juveniles that were stocked as fingerlings within the last four years. No juvenile walleyes had been caught during the 2001 survey. The catch of juveniles in 2004 is a good indication that the recent fingerling walleye stockings have been successful. In addition, 19 northern pike and 23 smallmouth bass were caught. Only one yellow perch was caught, indicating that the yellow perch fishery has not recovered from its collapse in the late 1980s.

Pathogen indicators (coliform bacteria)

The Conesus Lake Watershed Inspector samples at bathing beaches permitted by LCDOH during the recreational season. Recent sampling indicates that bacteria levels in the lake are within safe levels for recreation (Figure 4).

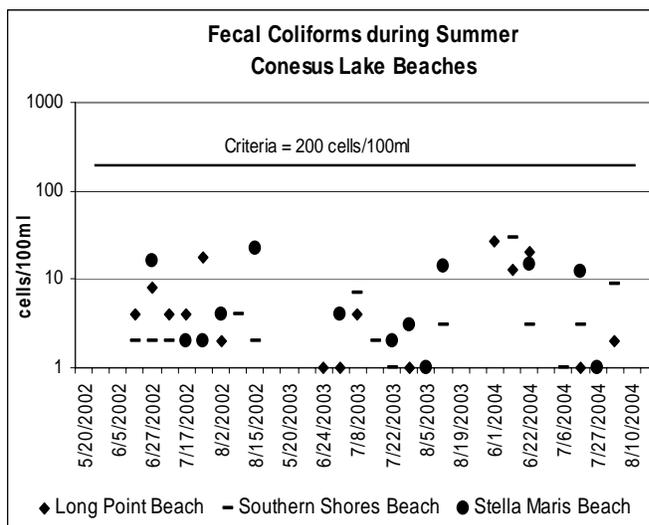


Figure 4. Plot shows count of fecal coliforms sampled in beaches along Conesus Lake shore, May - August 2002 to 2004. Note values are plotted using a logarithmic scale. Highest count was 22 cells/100ml, which is below the NYS standard for safe swimming of 200 cells/100 ml.

Zebra mussels

Zebra mussels continue to be an important component of the lake's benthic community. NYSDEC has been monitoring the Finger Lakes for water quality and environmental factors potentially affecting (and affected by) zebra mussels. Data have been collected each year since 1995 to assess the communities of phytoplankton and zooplankton, calcium concentrations of the lake water, and nutrient levels.

The Planning Department submitted a proposal to the Finger Lakes-Lake Ontario Watershed Protection Alliance (FL-LOWPA) requesting special project funds to complete a benthic survey in 2005.

NEW INVESTIGATIONS—2004

Water quality data were collected in 2004 by Professors Joe Makarewicz and Sid Bosch (SUNY Brockport and SUNY Geneseo) to refine estimates of external and internal phosphorus loading into the lake. This special testing is part of the continuing evaluation of the benefits of an alum treatment program.

In addition, samples were taken to characterize the algal and zooplankton communities in Conesus Lake. Data were published in November 2004; an interpretive report is pending. This study is part of the long-term lake and watershed monitoring program recommended in CLWMP.

RESEARCH PROGRAMS UNDERWAY AS PART OF USDA GRANT

Funds were awarded in 2002 to a group of researchers and cooperating agencies led by Dr. Makarewicz of SUNY Brockport. The three-year project is designed to test the effectiveness of agricultural Best Management Practices (BMPs) in reducing loss of soils, nutrients, bacteria, and other pollutants.

Three cooperating farms are implementing BMPs to keep soil and applied materials on the landscape and prevent their loss to the streams and, ultimately, to Conesus Lake. Nate Herendeen and Nancy Glazier of Cornell Cooperative Extension (CCE), and Pete Kanouse of Livingston County Soil and Water Conservation District (SWCD) are working directly with the farms in instituting BMPs.

Stream monitoring tracks the export of water and materials in subwatersheds with and without cooperating farms. Streams are monitored year-round.

These data are posted on the project web site http://www.envsci.brockport.edu/Conesus_Project. Data analysis is underway; preliminary results indicate that the BMPs are having a beneficial effect.

Investigating how the BMPs affect the lake's weed beds is also part of the USDA-funded program. Dr. Sid Bosch of SUNY Geneseo is continuing his evaluation of the size and density of the weed beds and changes in the dominance of Eurasian watermilfoil. He is also looking at the metaphyton community, these are free-floating green algae that form mats within weed beds and create unsightly conditions.

Dr. Robert Simon of SUNY Geneseo is monitoring bacteria in watershed streams. Again, data analysis is underway; preliminary results suggest that the BMPs are effective in reducing the numbers of bacteria washed off the landscape.

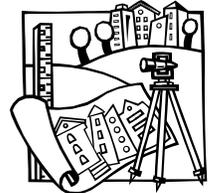
Another interesting investigation by Dr. Makarewicz and his graduate students relates to source typing of bacteria; that is, determining whether fecal bacteria are coming from humans, cattle, geese, or other wildlife. Results differ for each stream. However, geese turn out to be to be an important source.

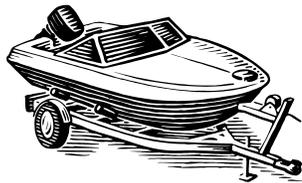
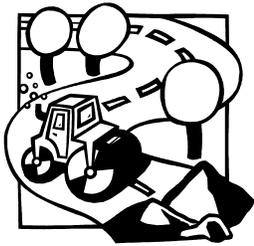
Researchers from Rochester Institute of Technology have produced detailed bathymetric maps (maps of the lake bottom) and constructed a hydrodynamic model showing how water moves and transports materials within the lake. The model is able to simulate the lake's water temperatures and predict where sediment will be deposited.

The SWCD, Farm Services Agency, and CCE provide technical services and training to the agricultural community. A brochure describing agricultural BMPs in the Conesus Lake watershed has just been produced.

PART B: CLWMP RECOMMENDATIONS STATUS UPDATE

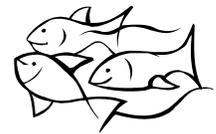
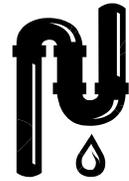
No.	Recommendation	Priority	Percent Completed	Comments
	Creation of a Conesus Lake Watershed Council and its Committees.	High	100%	Council activities are on-going
A-1	Review and amend zoning regulations to make them more lake-friendly	High	30%	In progress as part of G/FLRPC local laws project
A-2	Adopt local sediment and erosion control laws based on the CLWMP Model Erosion and Sediment Control Law	Medium	100% (lakeshore Towns)	Enforcement on-going
A-3	Develop public education campaigns: <ul style="list-style-type: none"> • Encourage planting and protection of streamside vegetation • Discourage use of herbicides, pesticides, and fertilizers on shoreline properties • Erosion control and lake-friendly landscaping 	Medium	60%	On-going effort; publication of lake and watershed stewardship booklet in 2004
B-1	Secure funding to help mitigate the financial impacts of changes in agricultural practices on the producers.	High	20%	USDA grants, SWCD, and FSA programs
B-1, B-2	Implement practices that will reduce nonpoint source pollution from farms.	High	15%	USDA funded program
B-3*	Develop & implement programs for waste removal from farms	High	0*	
B-4	Develop programs for public education and outreach for both the agricultural and the non-agricultural community.	High	60%	On-going effort; publication of lake and watershed stewardship booklet in 2004
B-5	Recruit additional agricultural producers to serve on advisory committee during implementation phase of watershed management plan	High	100%	On-going
C-1	Develop and implement program to restore and stabilize streambanks in the watershed.	High	5%	Investigating funding opportunities
C-2	Identify & develop sites for regional stormwater treatment areas	Low	5%	Grants pursued





No.	Recommendation	Priority	Percent Completed	Comments
D-1	Provide training on erosion control practices for Municipal Highway Departments	High	100%	On-going
D-2	Implement best management practices, such as hydroseeding or other approved methods, as soon as possible after road construction or maintenance activities occur in the watershed.	Medium	15%	
D-3	Municipal Highway Departments should develop a plan, subject to available funding, to remediate ditches in poor condition.	Medium	5%	Environmental Protection Fund application submitted
D-4*	Develop plan to phase-in computer controlled spreaders on trucks used for winter de-icing	Low	0*	
D-5	Develop public education campaigns: <ul style="list-style-type: none"> • Sensible winter driving • Why and when are road ditches cleaned • Need to keep yard debris and trash out of road ditches 	Low	60%	On-going effort; publication of lake and watershed stewardship booklet in 2004
E-1, E-6	Revise Watershed Rules and Regulations	High	100%	Submitted to NYS-DOH for approval; awaiting response
E-2	Develop a public education campaign: <ul style="list-style-type: none"> • Effect of boat speed on weeds (creates weed-chop) • Precautions to follow when discarding unused bait or transporting bait from one waterbody to another (exotic species introduction) • Need to clean and inspect boat (body, bilge, coolant system, etc.) and trailer when transporting from one waterbody to another (exotic species introduction) • Existing boat and personal watercraft laws 	High	60%	On-going effort; publication of lake and watershed booklet in 2004
E-3	Continued enforcement of existing boat and personal watercraft laws	High	100%	On-going
E-4	Amend Town dock laws to add the provision of 24-hour access to toilet facilities to the list of requirements for granting a Special Use Permit.	Medium	0%	Part of G/FLRPC local laws project
E-5	Winterize toilet facilities at State Boat Launch and Long Point Park.	Medium	0%	

No.	Recommendation	Priority	Percent Completed	Comments
F-1	Request NYSDEC to review and update safe water yield calculations for Conesus Lake.	High	100%	Submitted to DEC; awaiting response
F-2	Extend sewer system	Medium	15%	
F-3	Control sanitary sewer overflows within the collection system.	Medium	15%	On-going
F-4	Develop protocol and timeline to inventory septic/sanitary systems in watershed.	Low	5%	
G-1	Investigate and implement effective methods to control the spread of non-native (exotic) organisms.	High	5%	
G-2	Develop and implement a program for cleaning accumulated aquatic plants and algae along the shoreline of Conesus Lake.	High	25%	CLA pilot program, August 2004
G-3	Initiate effort to determine if alum treatment to control release of phosphorus from deep lake sediments would be effective in Conesus Lake. Proceed with plans for implementation if effectiveness is warranted and monitor for environmental impacts.	High	20%	Feasibility analysis and SEQR process completed. Finding of no significant impact.
G-4	Initiate effort to determine if increased stocking of walleye fingerlings, or other species, would be an effective biological control in Conesus Lake.	High	35%	Construction of NYSDEC/FLCC rearing ponds. Summer 2004, approximately 87,000 walleye fingerlings were stocked in the lake.
G-5	Initiate an experimental program for control of aquatic weeds using the aquatic moth and/or weevil.	Medium	10%	Technical Committee has met with weevil vendor
G-6	Develop program for suctioning weeds from shallow public areas	Low	5%	
G-7	Develop weed harvesting program	Low	0%	
H-1	Conduct an annual monitoring program of Conesus Lake and its watershed. An annual monitoring meeting should be held to coordinate the monitoring program.	High	100%	On-going
H-2	Prepare and distribute an annual Conesus Lake and Watershed Report Card	High	100%	On-going



*These recommendations were not targeted for work in 2004.

Key to Acronyms

CLA—Conesus Lake Association
 CLWMP—Conesus Lake Watershed Management Plan
 FLCC—Finger Lakes Community College
 FSA—Farm Services Agency

G/FLRPC—Genesee/Finger Lakes Regional Planning Council
 NYSDEC—New York State Department of Environmental Conservation
 NYSDOH—New York State Department of Health
 SEQR—State Environmental Quality Review
 SWCD—Soil and Water Conservation District
 USDA—United States Department of Agriculture

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