



# Conesus Lake and Watershed Report Card

Assessment of the Conesus Lake Watershed  
Management Plan in 2005

*Conesus Lake Watershed Council*

*May 7, 2006*



## *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.

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## *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 2005 and made significant progress on several CLWMP initiatives.

- In 2004, a detailed analysis authorized by The Watershed Council and the Livingston County Board of Supervisors demonstrated that alum treatment would be an environmentally safe and effective means of reducing phosphorus and algae in Conesus Lake. The State Environmental Quality Review (SEQR) process was followed, and the Final EIS was approved by the Board of Supervisors in December 2004. In 2005, the Livingston County Planning Department received a Special Projects Fund grant through Finger Lakes-Lake Ontario Watershed Protection Alliance (FL-LOWPA) to fund a benthic survey, which was required per NYSDEC comment on the alum FEIS. A benthic survey was completed by Dr. Sid Bosch of SUNY Geneseo in the summer of 2005.
- A booklet on watershed stewardship issues was published late in 2004, under the direction of Watershed Manager Don Wetzel. The booklet was distributed by the Conesus Lake Association (CLA) and the Planning Department in 2005. Copies are available from the Conesus Lake Watershed Manager, Livingston County Office Building Room 305, phone 585-243-7917.
- A. Stephen Kronquest of Eagle Point in Geneseo organized a citizen pledge, where all of the residents of Eagle Point agreed to forgo use of fertilizers and broadly applied weed killers. The CLA expanded the Eagle Point pledge to all CLA members with the Winter 2005 membership renewal information. The initial response from CLA members was been positive, with members of 460 households – almost 700 individuals – signing the lake-friendly pledge.

- 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. In June 2005, EPF application was expanded to include Livingston County and the Towns of Conesus, Geneseo, Groveland, Livonia and Sparta. As of the date of this Report Card, the application is pending.
- In May 2005, the CLA received a grant through Boats US to update and reprint 10,000 Conesus Lake boating brochures. The updated brochures were distributed in July 2005.
- In 2004, the Watershed Manager presented materials to the Technical Committee about the use of weevils for the control of Eurasian watermilfoil. In July 2005, the CLA sponsored a weevil pilot test in the 4000 block of East Lake Road using 7,000 weevil larvae. SUNY Geneseo will be monitoring results of this pilot program, which will be completed in Spring 2006. Results of the pilot program will help determine whether weevils could be an effective control measure for Conesus Lake.
- Support for walleye rearing and stocking continued in 2005. 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. This non-native fish has caused changes in the lake's food web leading to higher algal abundance and turbid water. The cooperative walleye rearing program was initiated in 2004 between the Finger Lakes Community College (FLCC) and New York State Department of Environmental Conservation (NYSDEC), with additional support from the Conesus Lake Association through funding from Senator McGee.
- Activities to reduce nonpoint source pollution from farms continued through 2005:
  - SUNY Brockport received a grant through Altria (parent company of Kraft Foods) for agricultural BMPs on the east side of Conesus Lake.
  - A second USDA grant application has been funded to increase the number of participating farms for 2005-2006.
  - The Livingston County Soil and Water Conservation District has completed four whole farm plans for farms in the Conesus Lake watershed. Five more whole farm plans are underway.
- Livingston County has also obtained grant funding for the following projects:
  - NYS Quality Communities Program to develop streambank mitigation plans for several streams in the watershed.

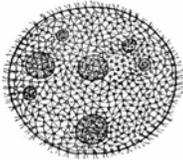
## PART A: CONESUS LAKE WATER QUALITY STATUS UPDATE

### Weed growth

Weed growth remains a major issue affecting recreational use of Conesus Lake. Dr. Sid Bosch (SUNY Geneseo) published the results of 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

Summer phosphorus levels, algal abundance, and water clarity continue to be problematic. In 2004, Conesus Lake was moved to a category of the 303(d) list requiring preparation of a Total Maximum Daily Load (TMDL) allocation. The TMDL, to be prepared by NYSDEC, will identify the sources of phosphorus and sediment affecting the lake and define measurable targets for reduction.



Volvox is a type of algae

### Sedimentation

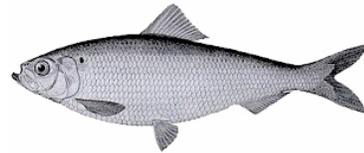
Since August 2002, investigators have made weekly measurements of stream flow and the loss of nutrients and sediment at seven watershed locations. This program is part of the USDA research program led by Dr. Joseph Makarewicz (SUNY Brockport) and Dr. Sid Bosch (SUNY Geneseo). The monitoring program continues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

### Sodium and chloride (salt) concentrations

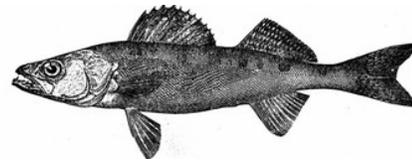
Sodium and chloride concentrations in Conesus Lake have steadily increased as the watershed developed. Efforts are underway to control road salt. As of 2004, all salt piles in the watershed are covered.

### Fisheries

Biologists from NYSDEC Region 8 conducted a Fish Stock Assessment Survey in September 2004. These surveys are conducted at three-year intervals. The next NYSDEC Region 8 survey is anticipated for 2007. Raising and stocking of walleye fingerlings to control alewives in Conesus Lake continued during 2005.



Alewife



Walleye

### Benthic (bottom-dwelling) animals

Zebra mussels continue to be an important component of the lake's benthic community. Dr. Sid Bosch and associates studied spawning and larval production of zebra mussels in the lake during 2004. The final data report on this study was released in the spring of 2005.

The Planning Department received Special Project Funds from the Finger Lakes-Lake Ontario Watershed Protection Alliance (FL-LOWPA) to complete a benthic survey in 2005. This benthic survey was requested by NYSDEC as part of the Final EIS for the potential alum project.

### 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.

## NEW INVESTIGATIONS—2005

Several new investigations were initiated in 2005 to support ongoing efforts to implement the recommendations of the Watershed Management Plan. Interpretive reports for sampling activities in 2004 were also made available in 2005.

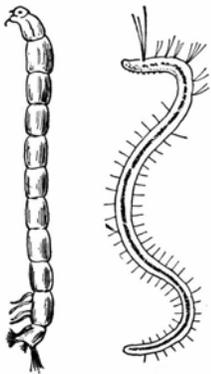
### Alum Treatment Project

One recommendation of the Watershed Management Plan was to determine if alum treatment to control release of phosphorus from deep lake sediments would be effective in Conesus Lake. This nutrient becomes a food source for water column algae, which in high numbers can cloud the water and turn it green. Lower phosphorus concentrations in the water would mean less abundant water column algae.

Alum application to treat in-lake phosphorus has been under evaluation since 2003. An initial report by EcoLogic in 2003 indicated that alum treatment would be environmentally safe and effective. In 2004, the State Environmental Quality Review process for alum treatment was initiated, and the Final Environmental Impact Statement was approved in December 2004.

### Benthic Survey

A baseline macroinvertebrate benthic survey was requested by NYSDEC Region 8 as part of the Final EIS. Through FL-LOWPA, a Special Projects grant funded a benthic survey in the summer of 2005, conducted by Dr. Sid Bosch with associates from SUNY Geneseo and SUNY Brockport. This was the most comprehensive deep-water benthic macroinvertebrate community study to date in Conesus Lake.



Left: midge larvae  
Right: aquatic worm

Dr. Bosch and his associates reported that the deep-water areas of the lake, below 8 meters (26 feet), were dominated by species of aquatic worms and midge larvae that are tolerant of low oxygen conditions and high levels of organic enrichment. Shallower waters, with more oxygen, supported a higher diversity of organisms dominated by zebra mussels.

### Dose Testing

Jar tests were conducted by Dr. Mark Noll of SUNY Brockport during summer 2005. The tests allow scientists to calculate a dose of alum for the lake that would reduce phosphorus while protecting water quality and fish populations. The tests measure phosphorus removal and changes in pH and aluminum concentrations under a range of alum dosage. Results confirm that alum could be applied at concentrations that would remove phosphorus while keeping pH and aluminum within safe levels.

### Aquatic Weeds

While alum is being investigated to control algal growth, other studies are underway to control weed beds.



Milfoil

### Weevil Pilot Program for Eurasian Watermilfoil Control

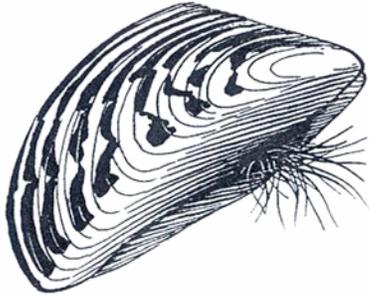
Another recommendation of the Watershed Management plan was to investigate control of aquatic weeds using the aquatic moth and/or weevil. In July 2005, the CLA sponsored a weevil pilot test in the 4000 block of East Lake Road using 7,000 weevil larvae. SUNY Geneseo will be monitoring results of this pilot program, which will be completed in Spring 2006.



Milfoil weevil

## Zebra mussels

During the summer of 2004, Dr. Bosch and his associates studied the timing of spawning and larval production by zebra mussels in Conesus Lake relative to lunar cycles and compared the numerical production of larvae to records from previous summers. Their findings were released in 2005.



Zebra mussel

This study identified a pattern of low-level reproductive activity punctuated by mass spawning events, consistent with previous studies on Conesus Lake and elsewhere. The peak spawning events coincided with times of the full moon, consistent with the hypothesis that moonlight may provide a synchronizing cue for zebra mussel reproduction. Larval production in 2004 was close to the highest levels recorded in previous summers.

## 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.

A second USDA grant application has been funded to increase the number of participating farms for 2005-2006. SUNY Brockport received a grant through Altria (parent company of Kraft Foods) for agricultural BMPs on the east side of Conesus Lake.

The Livingston County Soil and Water Conservation District has completed four whole farm plans for farms in the Conesus Lake watershed. Five more whole farm plans are in progress.

### BMP Status

Three participating 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 farms in instituting BMPs.

### Stream Monitoring

Stream monitoring tracks the export of water and materials in subwatersheds with and without participating farms. Streams are monitored year-round. These data are posted on the project web site [http://www.envsci.brockport.edu/Conesus\\_Project](http://www.envsci.brockport.edu/Conesus_Project). Data analysis confirms that the BMPs are having a beneficial effect.

### Algal Growth and Runoff

Investigating how the BMPs affect the lake's weed beds is also part of the USDA-funded program. Nuisance growth of filamentous algae (metaphyton) in nearshore areas is a major issue affecting recreational use of Conesus Lake. Dr. Sid Bosch and associates studied the lake to document the distribution of filamentous algae growing in weed beds around the lake. Filamentous algae are free-floating green algae that form mats within weed beds and create unsightly conditions.

The results of this study indicate that filamentous algal growth was enhanced by runoff from the watershed during the spring and summer of 2004. The influence of in-lake nutrients may have been relatively limited.

Bacterial monitoring

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.

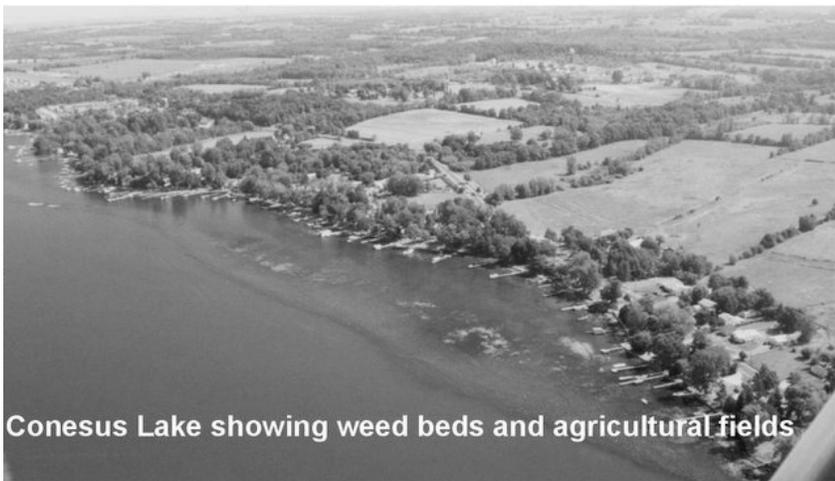
Another interesting investigation by Dr. Makarewicz and his graduate students relates to source typing of bacteria; that is, determining whether fecal bacteria are coming from humans, cattle, geese, or other wildlife. Results differ for each stream. However, geese turn out to be to be an important source.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

Hydrodynamic Modeling

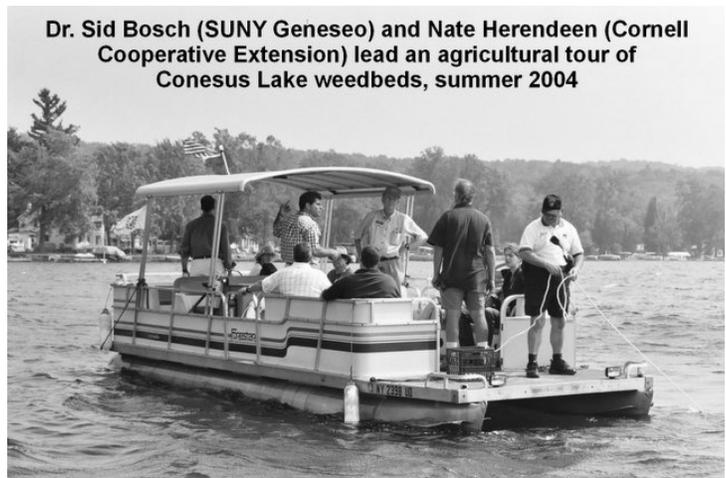
Researchers from Rochester Institute of Technology have produced detailed bathymetric maps (maps of the lake bottom) and constructed a hydrodynamic model showing how water moves and transports materials within the lake. The model is able to simulate the lake's water temperatures and predict where sediment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

Publications

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 was distributed in 2005.



Conesus Lake showing weed beds and agricultural fields

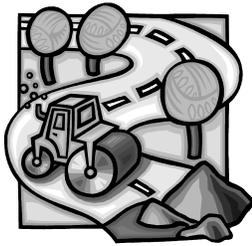


Dr. Sid Bosch (SUNY Geneseo) and Nate Herendeen (Cornell Cooperative Extension) lead an agricultural tour of Conesus Lake weedbeds, summer 2004

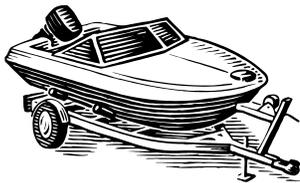
## PART B: CLWMP RECOMMENDATIONS STATUS UPDATE

No.	Recommendation	Priority	Percent Completed	Comments
	Creation of a Conesus Lake Watershed Council and its Committees, and the hiring of a Conesus Lake Watershed Manager	High	100%	Council activities are on-going
A-1	Review and amend zoning regulations to make them more lake-friendly	High	30%	G/FLRPC local laws project completed
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"> <li>• Encourage planting and protection of streamside vegetation</li> <li>• Discourage use of herbicides, pesticides, and fertilizers on shoreline properties</li> <li>• Erosion control and lake-friendly landscaping</li> </ul>	Medium	60%	On-going effort; distribution of lake and watershed stewardship booklet in 2005; monthly news articles by Watershed Manager.
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; 4 whole farm plans completed.
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	20%	<ul style="list-style-type: none"> <li>• On-going effort; distribution of stewardship booklet in 2005</li> <li>• Citizen pledge</li> <li>• Monthly news articles</li> </ul>
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%	NYS QCP grant received
C-2	Identify & develop sites for regional stormwater treatment areas	Low	5%	Grant funding being pursued

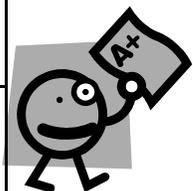
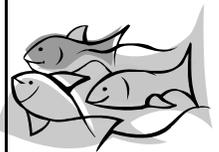
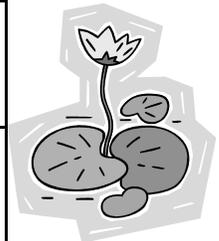
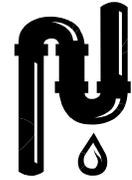




No.	Recommendation	Priority	Percent Completed	Comments
D-1	Provide training on erosion control practices for Municipal Highway Departments	High	100%	On-going
D-2	Implement best management practices, such as hydroseeding or other approved methods, as soon as possible after road construction or maintenance activities occur in the watershed	Medium	25%	Environmental Protection Fund application submitted
D-3	Municipal Highway Departments should develop a plan, subject to available funding, to remediate ditches in poor condition	Medium	5%	Remediation occurs as funding allows
D-4*	Develop plan to phase-in computer controlled spreaders on trucks used for winter de-icing	Low	0*	Not practical at this time
D-5	Develop public education campaigns: <ul style="list-style-type: none"> <li>• Sensible winter driving</li> <li>• Why and when are road ditches cleaned. Need to keep yard debris and trash out of road ditches</li> </ul>	Low	60%	On-going effort; distribution of stewardship booklet in 2005; monthly news articles by Watershed Manager
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"> <li>• Effect of boat speed on weeds (creates weed-chop)</li> <li>• Precautions to follow when discarding unused bait or transporting bait from one waterbody to another (exotic species introduction)</li> <li>• Need to clean and inspect boat (body, bilge, coolant system, etc.) and trailer when transporting from one waterbody to another (exotic species introduction)</li> <li>• Existing boat and personal watercraft laws</li> </ul>	High	60%	On-going effort; distribution of lake and watershed stewardship booklet in 2005; distribution of new boating brochures in 2005.
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 2004; awaiting response
F-2	Extend sewer system	Medium	0%	NYS CW/CA Bond Act grant received
F-3	Control sanitary sewer overflows within the collection system.	Medium	15%	On-going; NYS CW/CA Bond Act grant received
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%	Distribution of boating brochure and stewardship booklet.
G-2	Develop and implement a program for cleaning accumulated aquatic plants and algae along the shoreline of Conesus Lake.	High	5%	
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%	FL-LOWPA benthic survey grant received; benthic survey completed
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%	CLA financial support of NYSDEC/FLCC walleye rearing continued in 2005.
G-5	Initiate an experimental program for control of aquatic weeds using the aquatic moth and/or weevil.	Medium	10%	Weevil pilot project started in July 2005; will be completed Spring 2006.
G-6	Develop program for suctioning weeds from shallow public areas	Low	5%	Technical Committee heard presentation at June 2005 meeting.
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 2005.

#### 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  
 TMDL—Total Maximum Daily Load

For additional information contact: :

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<http://www.livingstoncounty.us/conesus.htm>



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