



OLA News

August 2005

Members Meeting

Sat. August, 20 8:30 - 10:30 AM

Special Topic

SEPTIC SYSTEM INSPECTIONS – WILL THIS AFFECT YOU??

The **Otsego Lake Septic System Inspection Program**, currently being conducted by the Otsego Lake Watershed Supervisory Committee (WSC), is already having a financial impact on many lakeside property owners. Come to the Otsego Lake Association (OLA) special meeting at 8:30 AM on Saturday, August 20th at the SUNY Biological Field Station Building (Cooperstown Graduate Program Classroom – 1st Floor) on NYS Route 80 just north of the Fenimore House to learn all about the program, have your questions answered, and express your thoughts. A panel, consisting of representatives of the Watershed Supervisory Committee, lakeside property owners (who have gone through an actual inspection and are now faced with putting in a replacement system), and consulting engineers (who are currently working on various lakeside septic systems), will present updated information, treatment options to consider, plus the role of the New York State Department of Health

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Special Membership Meeting: August 20th

OLA is holding special member's meeting on August 20th. A detailed program description is posted to the left. The agenda can be found on the last page. This short general meeting is packed with information you can use to protect and preserve Otsego Lake – and may save you money. Additionally, you can question current directors and officers informally before and after the meeting.

Be there – and bring a friend.



FESTIVAL

COOPERSTOWN, NY · 2005

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For information regarding Lake Festival, go to page 2.

OTSEGO LAKE FESTIVAL: "A GREAT SUCCESS"

The first Otsego Lake Festival, held at Lakefront Park, Saturday, July 9, 2005 surpassed expectations. Public comment and press coverage were not only favorable, but exuberant about the event which was educational and enjoyable for both young and old.

Attendance was estimated at nearly one thousand in spite of threatening weather! Community involvement and support were outstanding, with over fifty people donating time, talent, goods and services. Honorary sponsorship by Jane Clark, Lou Hager, and Henry Cooper made the event credible while financial sponsorship by foundations, organizations, legislators and individuals made it possible. Festival expenses were covered, funding was raised for Otsego lake initiatives, and "seed" money is in place for Lake Festival, 2006 (date soon to be announced).

OLA had a high-profile presence at the Festival with our demonstration buffer strip, interpreted by our own Paul Lord, and our information table, staffed by various OLA volunteers throughout the day. Thanks, to all who helped. There are now a lot more people wearing our shirts and caps, and reading Landscaping for Wildlife and Water Quality, and the extra \$1,600 in our treasury will allow us to do more good work for the health of our lake!

The search is on for OLA members to serve on the executive committee for Otsego Lake Festival 2006. The planning begins next month! This year's committee realized that we need many more people to share the responsibilities. Please consider contributing your services.

Lake Festival 2005 Mementos Still Available

There are still OLA shirts and caps left. There are also Lake Festival posters, signed and unsigned available. Half of the proceeds from the posters go to the Water Quality Coordinating Committee. These will become collectables! They are great gifts! Contact Scottie Baker at 547-5356 if you would like to purchase any of the Lake Festival or OLA posters or clothing.

Answer to Limnological Question (from page 5):

The maximum theoretical wave height in Otsego Lake is about 109 cm high (3ft. 7 in.).

I hope you are now more familiar with your lake. My intention is to post similar articles in future OLA Newsletters. However, if you have specific questions about limnology and Otsego Lake, I will try to address them as well. Email questions to me at horvattg@oneonta.edu and I will post both questions and answers in future newsletters.

SEPTIC SYSTEM INSPECTIONS

Continued from page 1.

(NYSDOH). The panel will be moderated by K. Wayne Bunn, P.E., a consulting civil engineer and OLA Director at Large.

During the panel discussion,

- (a) the role of the NYSDOH will be summarized briefly, followed by:
- (b) a presentation by the Watershed Supervisory Committee on what constitutes a failed system including the results of recent inspections and what to expect in the future,
- (c) a presentation by lakeside property owners who recently went through an actual inspection and are now working with a consulting engineer,
- (d) a presentation by Lamont Engineers of Cobleskill on alternative secondary treatment systems (raised fill and mound systems, and intermittent media filters) and tertiary treatment systems (phosphorus removal) including some options for shared solutions,
- (e) a presentation by DeWaal Engineering of Richfield Springs on gravel less systems (wrapped pipes, chambers, and bio-matts) and aerobic treatment (aeration units), and, finally,
- (f) plenty of time for questions and comments by the members and an open discussion between the members and the panel.

Every property owner within 500 feet of Otsego Lake and 100 feet of the lake's tributary streams will have their septic system inspected under the current program which is planned for a five year period. The inventory of existing systems was completed in 2004 with the initial actual inspections started in 2005. It is the responsibility of the property owner to locate his or her septic system, to uncover the septic tank, and then to contract with a local septic system company to actually pump out the septic tank for the inspection. The property owner will receive a certified letter from the Watershed Supervisory Committee requesting that the property owner set a date for the inspection, hire a plumber to locate and uncover the system if necessary, and pay for the cost of the pump out. If a system fails the inspection, the property owner will receive a *Notice of Violation* which will specify the nature of the violation, the corrective action required, and the date by which the corrective action must be completed. Property owners will have up to one year to correct problems. By now, all property owners should have received informational mailings from the Watershed Supervisory Committee about the program.

The septic system inspection program is important to the future health of Otsego Lake and serves to protect the water supply for the Village of Cooperstown. Come to the meeting to obtain current information so you will be knowledgeable. Just as importantly, please come and find out how this might affect you personally and, then, let the Watershed Supervisory Committee and the OLA know what you think about the program.

Invite your neighbors, even if they are not OLA members!!

Understanding Your Lake: Wind & Water

Tom Horvath, Ph.D., Aquatic Biologist & Limnologist

As an OLA member, I look out on the beauty of Otsego Lake almost every day, but as a **Limnologist**, a person who studies lakes, I look out and also see the great complexity of the lake. This is the first installment of a series of articles on **Limnology**, the study of lakes, that will try to inform OLA members about the great physical, chemical, and biological aspects of Otsego Lake.

Last year, someone asked me what the best line for him to take on his cross-lake swim so that he would have the least resistance. I shook my head and started to think about the many, many hours I have spent trying to understand the complexities of water movement in lakes. I find this aspect of physical limnology to be the most complicated area of limnology to understand. Take a peak at a summary figure from Jacob Kalff's textbook, Limnology (figure box below).

What moves water? Most of my students have answered this question partially correct: "Wind moves water", they say. "But how?" Here is where they go wrong. They answer that wind creates waves and waves carry things around on the lake. Half credit.

Wind does create waves, but surprising to most, and to me the first time I read through a limnology textbook, waves will only move water (and objects in the water) up and down. The water and whatever is in it are not going anywhere, they are simply oscillating within the **Surface Water Wave**. We perceive an optical illusion when we see waves "moving" across the lake's surface. Surface water waves are created as wind moves across the surface of a lake. Because of the friction between the air and the water, the wind is constantly "grabbing

and lifting" and then immediately "dropping" the water at the surface. This causes the water to move in small ellipses (see figure to right).

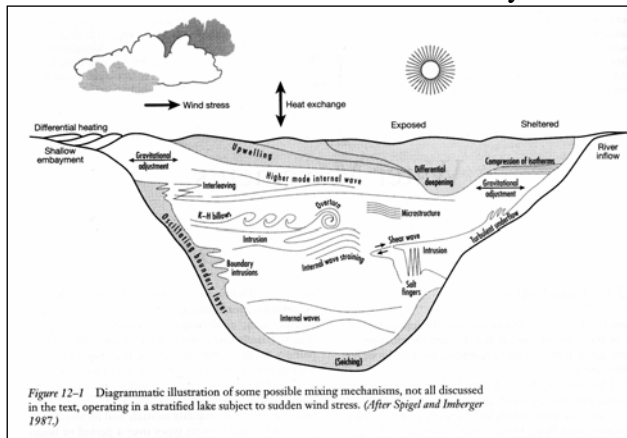
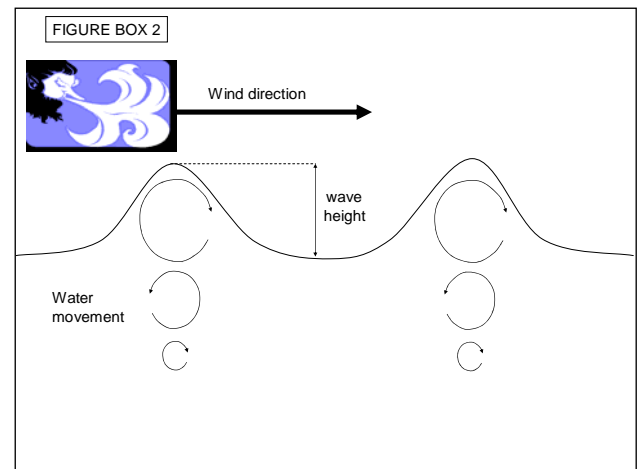


Figure 12-1 Diagrammatic illustration of some possible mixing mechanisms, not all discussed in the text, operating in a stratified lake subject to sudden wind stress. (After Spiegel and Imberger 1987.)

and lifting" and then immediately "dropping" the water at the surface. This causes the water to move in small ellipses (see figure to right).

Wave height is another issue. The number of times the wind "grabs" and "lets go" is greater when the wind has a long stretch of water to blow across. This is what limnologists call the **Fetch**, the longest distance over which the wind can impart its energy to the water. The longer the fetch, the higher the waves (see the Equation Box below). I grew up on the shores of Lake Michigan, a lake with a long fetch and large waves. Of course, stronger winds will have more "strength" to grab onto the water, so taller waves are also associated with stronger winds.

The reason that waves "break" on shore is that the distance that water is affected by the surface water wave can actually hit the lake bottom. This occurs in shallow areas such as near shore. When this happens, the up and down elliptical motion is converted to horizontal motion, and the wave moves toward shore. Out in the middle of the lake, the up and down motion never hits the bottom, so the waves stay put. We also see **Whitecaps** when it is windy. This is caused by the water being lifted high enough that the wind causes turbulence at the wave peak, and this turbulence causes the "frothing" of the water that we see as a whitecap. They obviously only occur when the wind is strong enough to lift the water high and then cause the turbulence.



On the lake, sailboat enthusiasts rely on wind to move them, canoeists and kayakers rely on their paddles and arms, and motor boaters rely on their gas-driven propellers. Other organisms, like fish, can move about by swimming. Water, however, gets moved around horizontally by currents (my students almost had it). The movement of water in horizontal directions is accomplished by currents not by waves. Wind does

Equation Box

A maximum wave height can be predicted, and to satisfy the mathematical equation lovers out there, here's a fun one attributed to arguably our greatest compatriotic limnologist, G. Evelyn Hutchinson (1903-1991). He showed that wave height is a function of wind fetch. In 1957, he empirically came up with $h = 0.332(x)^{1/2}$, where h is wave height in m and x is fetch in km. Otsego Lake is about 10.81 km at its longest effective stretch, so how high can a wave get (answer on the last page)? Well, we won't be a site for the world surfing championships anytime soon.

play a role in forming currents, as do other forces. In addition to the "lifting" and "dropping" of water, explained above, the wind also drags the water along. This is, again, because of friction between air and water. As you can see from the first figure above, many different types of currents are moving at the same time. Understanding them all could earn you graduate credit at any university, but that's not the point of this article.

One particularly interesting current leaves a visible trace on the lake's surface that we call **Streaks** or **Windrows**, which appear as thin parallel lines of foam. If you haven't noticed them before, look for them this season. They are caused by the wind blowing in the same direction for extended time periods. In Otsego Lake, they show up best when the wind is from the north or south. The current that causes them is called a **Langmuir Current**, named after I. Langmuir who described it in 1938 on Lake George. Remember that water is moving up and down and in small ellipses in the surface water

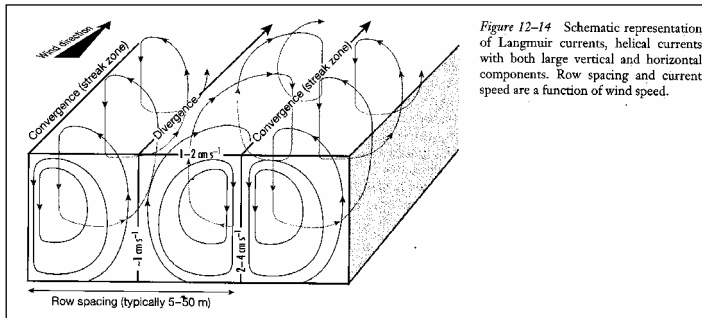


Figure 12-14 Schematic representation of Langmuir currents, helical currents with both large vertical and horizontal components. Row spacing and current speed are a function of wind speed.

waves. It is also being dragged horizontally in the direction of the wind. So we have movement in 3-dimensions to track (this is where my brain starts hurting). The resulting current is best thought of as a series of corkscrews working in opposite directions along the

path of the wind (use the Kalff figure and break out two corkscrews and see first hand).

This motion sets up areas where water is converging, or coming together, and areas where water is diverging, or moving apart. The zone of convergence traps foam and other floating "stuff" where we see streaks. The foam itself is completely natural, and is formed by natural organic compounds (not necessarily pollution) coagulating together as the water gets mixed (you can simulate foam yourself by collecting the lake water in a bottle and shaking it vigorously). These Langmuir currents play an important role in mixing the surface waters and transferring heat from the surface to the water below.

Go to page 2 for answers.

Otsego Lake Association Special Septic System Inspection Meeting
Saturday, August 20

1. WELCOME & INTRODUCTIONS
 - a. Introduction of Panel & Agenda
 - b. Section 1100 of NYS Public Health Law [Cooperstown Water Supply Source]
 - c. NYS Department of Health Involvement
2. OTSEGO LAKE WATERSHED SUPERVISORY COMMITTEE (WSC)
 - a. What Constitutes a Failed System, Status of Inspections to Date, & What to Expect
3. DESCRIPTION OF ACTUAL INSPECTION
 - a. Property Owner's Actions Before, During, and After Actual On-Site Field Inspection
4. ENGINEERING OPTIONS FOR FAILED SYSTEMS
 - a. Raised Fill & Mound Systems, and Intermittent Media Filters
 - b. Phosphorus Removal Systems
 - c. Creativity and Options that Property Owners May Wish to Explore with WSC
 - d. Gravelless Systems (Eljen In-Drain System)
 - e. Aerobic Systems (Multi-Flo Aeration System)
5. QUESTIONS, ANSWERS, & COMMENTS
 - a. Property Owners/Members
 - b. Future Town Sewer District Option?

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