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## Acronyms

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ACOE	Army Corps of Engineers
CAFO	Concentrated Animal Feeding Operation
CCE	Cornell Cooperative Extension
CCHD	Cayuga County Health Department
CCDPD	Cayuga County Department of Planning and Development
CCSWCD	Cayuga County Soil and Water Conservation District
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
IAGT	The Institute for the Application of Geospatial Technology
NMP	Nutrient Management Plan
NRCS	Natural Resources Conservation Service
NYSDEC	New York State Department of Environmental Conservation
NYSECO	New York State Environmental Conservation Officer
OLWIP	Owasco Lake Watershed Inspection Program
OLWRR	Owasco Lake Watershed Rules and Regulations
OWLA	Owasco Watershed Lake Association
OWN	Owasco Watershed Network
PBHS	Port Byron High School
SLWAP	Skaneateles Lake Watershed Agricultural Program
SLWIP	Skaneateles Lake Watershed Inspection Program
USFWS	United States Fish and Wildlife Service
WQMA	Water Quality Management Agency



## Overview of 2011

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In August 2007, the Owasco Lake Watershed Inspection Program introduced its first watershed inspector. In an agreement between the City Of Auburn, Town of Owasco, Cayuga County Soil and Water Conservation District, Cayuga County Water Quality Management Agency, as well as other local agencies, the inspector was hired to work exclusively on concerns and issues within the Owasco Lake Watershed.

The original funds established the Owasco Lake Watershed Inspection Program for its first year. The Program is now funded and secured through the municipal water users. There are approximately 44,000 people in several municipalities of Cayuga County that receive their drinking water from Owasco Lake. Through an increase in the water rates (4 cents per 1,000 gallons), the water consumers pay a nominal amount to protect their public drinking supply.

2011 was a year of new beginnings for the Owasco Lake Watershed Inspection Program. After much discussion and planning, the Owasco Lake Watershed Management Council had its first official meeting in March. Since its formation, the council has been working to bring together all of the municipalities within the watershed to take partnership in improving its health. There have also been discussions of hiring a part-time, year round inspector as well as a resource manager with funding coming from increased water rates and the continued contributions from grants.

The program underwent a change of inspectors this year as well. Jessica Reinhart stepped down as head Watershed Inspector in November after being on maternity leave since the beginning of August. The position is currently being filled by one of the seasonal watershed inspectors from the summer, Katie Jakaub.

In its fourth full year OLWIP logged a total of 518 hours in the field investigating water quality concerns by vehicle and foot patrol and completing 220 total inspections. Of those inspections made, 6 were violations of the Owasco Lake Watershed Rules and Regulations, 2 were violations of the New York State Department of Environmental Conservation and 2 were violations of the Army Corps of Engineers.

OLWIP was also able to hire 2 seasonal watershed inspectors during the 2011 summer months. Their tasks are outlined in the following pages.

The aim of the Inspection Program is to work with watershed residents to increase their understanding of watershed issues and to help restore the health and beauty of Owasco Lake.

To date, OLWIP has logged a grand total of 2,407 hours patrolling by foot, vehicle and boat, and reported on 2,034 total inspections. The Program plans to carry on with this momentum by expanding on areas that have not been looked at closely enough in the past, and emphasizing on areas of priority.

To acquire more information about Owasco Lake and its watershed, please visit the recently created Owasco Watershed Network (OWN). The network allows property owners to send the program an email with questions, concerns and even provides them the ability to upload photos regarding their inquiries. You can access OWN by going to [www.owascolake.org](http://www.owascolake.org).



## Agriculture

**February 18, 2011: Town of Scipio** – OLWIP responded to a call regarding possible manure entering tributary no.46. It was determined that a majority of the manure was entering the stream via a small swale in a field situated on the tributary's north bank. Inclement weather conditions caused runoff to occur in the form of sheet flow, carrying with it heavy amounts of nutrients. The NYS DEC Division of Water was contacted and a CAFO incident report was submitted on March 9. By May 24<sup>th</sup>, revisions to the said operation's NMP were made and plan to be implemented during the 2012 growing season. *Violation was abated pending the revisions to the NMP are implemented properly during the following growing season.*



*Above left: A large amount of foam was spotted exiting a feeder stream to the lake indicating excessive loading of nutrients. A follow up inspection to the mouth of the stream 10 days after the incident shows persisting residue (above right).*

**October 18, 2011: Town of Locke**— OLWIP was notified of cows dwelling in a tributary which outlets directly to the Owasco Inlet. OLWIP contacted the farmer who proceeded to explain his plans to install fencing around either bank of the tributary. OLWIP has been working closely with CCSWCD to request grant funds to aid the farmer in the installment of fencing and an alternative water source for his cattle. The farmer also mentioned that he plans to reduce his herd by the Spring of 2012, bringing the head count to 10 cattle thus reducing his impact on the watershed even further.



*When livestock is allowed access to a tributary, it is common to see a degradation in the quality of the water and in the overall quality/appearance of the stream itself (left)*

**December 21, 2011: Town of Skaneateles**—Manure runoff during a heavy rain event was reported to have been the cause of large amounts of foam collecting in a tributary to Dutch Hollow Brook. The foam was traced back to a source field situated on the watershed boundary between the Owasco Lake and Skaneateles Lake Watersheds. NYS DEC was contacted as well as the SLWAP and the SLWIP. OLVIP worked closely with the agencies involved to monitor remediation and cleanup. The farmer's NMP does not require him to till in the manure after spreading on that particular field. A revision request for the plan is currently taking place.



*Manure spread on a field leads to foaming due to an excessive amount of nutrients entering from runoff during a rain event (above left). A berm is installed where the grassed drainage swale empties into the tributary in order to catch runoff, allowing for any nutrients to settle before proceeding (above right).*

## Updates from 2010



*A berm catches silage leachate before it reaches a roadside ditch (above).*

**September 24, 2010: Town of Owasco**— Original violation was filed by the NYS DEC after silage leachate was found flowing into a roadside ditch. NYS DEC then contacted the OLVIP and CCSWCD to formulate a plan to deal with the situation. CCSWCD and OLVIP suggested a revision to the farm's current NMP. Implementation of these revisions was not completed until the following summer.

**August 17, 2011**— Silage leachate was flowing into a roadside ditch after breaching a berm behind which the leachate was collected. A berm constructed from piles of wood mulch and concrete barriers were temporarily placed at the bottom of the driveway to contain the leachate. An NMP was drawn up by CCSWCD and is currently in the process of being implemented. OLVIP and CCSWCD have been monitoring the implementation.

## Stormwater

**July 29, 2011 Town of Fleming** - OLWIP responded to a complaint of major land clearing taking place in the town of Fleming. About 30 acres of land appeared to have been bulldozed to bare soil. All branches, woody vegetation, and other debris were pushed into large piles and set alongside the banks of the two tributaries that run through the property. Three land bridges appeared to have been constructed by pushing dirt directly into the north branch of the stream obstructing any potential flow. Silt fences were placed downstream of 2 of the land bridges and were installed perpendicular to the stream. There was one other land bridge installed on the south branch of the stream. NYS DEC has taken over a majority of the investigation. Work has been postponed until the spring season arrives. OLWIP worked with CCSWCD to establish a 25 foot stream buffer of winter wheat to stabilize the soil during the winter months.



*The above photo shows a large pile of dirt and debris that had been bulldozed right up to the edge of the stream bank. Situations like this increase the potential for runoff and sedimentation to occur leading to a degradation of water quality.*

**September 8, 2011: Town of Moravia** – The USFWS contacted OLWIP requesting an inspection of a dump site located in Moravia. OLWIP visited the site where an assortment of materials were being dumped, prior to being bulldozed (lower left) The dumpsite, which is encroaching on a FEMA flood zone, consisted of materials such as crushed stone, boulders, concrete, asphalt, and woody debris (lower right). The USFWS has since taken over the investigation.



**October 31, 2011: Town of Owasco** – OLWIP received a call from a homeowner concerning the undermining of a small shed situated directly atop an eroding stream bank. OLWIP visited the site and worked with the homeowner to formulate several practical solutions regarding the issue. CCSWCD also provided insight, offering several other options to determine a low cost and effective solution.



The photo to the right demonstrates how the bank is undermining the shed sitting directly above. As high flow due to heavy rain events gush through a stream corridor, it carries with it sediment from the banks of the stream sometimes resulting in severe erosion.

## Updates

### From 2010



**Town of Scipio-** Since 2009, this site has been experiencing a significant portion of its bank lost due to massive erosion and undersized stormwater practices (photo 1). In 2010 OLWIP worked with CCSWCD to establish the size of the property's sub-watershed and to determine the path of all drainageways.

Both agencies recommended the landowner hire a professional contractor, which they did, and later had a retaining wall installed (photo 2). The retaining wall later failed due to poor installation and ignoring upslope water concerns (photo 3). After not responding for several months, the landowner contacted OLWIP on December 27, 2011 to discuss the matter. It was mentioned that the contractor hired will be installing a new retention wall in the Spring of 2012. Although OLWIP had already forwarded all information to the NYS DEC at that time, the Program is willing to continue working with the landowner.

### From 2009

**Town of Scipio-** Lakefront construction of a house began in May 2009 and proceeded until July 2010. During that time, OLWIP worked with the homeowner to ensure all erosion and sediment control practices were installed and functioning properly. Seasonal inspectors completed a follow-up inspection on August 3, 2011 and found a silt fence was improperly installed at the base of an unstable bank that was located directly on the lakeshore (right). OLWIP worked with the homeowner to properly install the silt fence. The bank has since been seeded and stabilized.



## Other Concerns within the Watershed

*July 8, 2011: Town of Moravia* - : During a feeder stream inspection, seasonal inspectors discovered an area of nearly half an acre where materials such as yard waste, ashes, scrap metal, dead fish, and other miscellaneous non-decomposables were being deposited directly on the bank of a stream. The site, located about 450 feet from the lakeshore, was owned by a homeowners association of which, OLWIP worked closely with to ensure removal of the materials. A follow-up inspection performed in November showed the site had been completely cleaned and all materials had been removed. A copy of the OLWRRs was sent to the homeowners association to ensure prevention of any violations in the future.

*Before:*



*After:*



**September 6, 2011: Town of Owasco** – During a survey of one of the tributaries of Sucker Brook, seasonal inspectors came across 2 junk cars located directly in a stream corridor. After further inspection, several more junk cars were found situated within a 100 foot linear distance of the stream. Two violation notices have been sent to the landowner from both OLWIP and Owasco Code Enforcement. OLWIP has yet to hear back from the landowner and has sent CCHD all information regarding the situation. CCHD has assumed enforcement of the situation.



**July 31, 2009: Town of Scipio** – The trash grate installed by CCSWCD in the past has since become so overwhelmed with dirt and debris that it is no longer effective. The grate is the responsibility of the homeowner’s association on which land it resides, therefore they assume the task of maintaining it. A follow up inspection of the grate was performed this past summer, however, it has not been cleaned out since the inspection program initially noted the situation in 2009.

*Assistant watershed inspector Sandro Valle stands atop the filled-in trash grate*





## Asian Clam

Ever since their initial discovery in Owasco Lake in September of 2010, the Asian Clam has been closely monitored by several government and environmental organizations. Many agencies along with OLWIP have since presented countless educational pieces to inform the public of the new invader.

Asian Clams, which are not indigenous to the United States, are believed to have been imported from a foreign source as a food product in the early 1900s. First identified in the United States in the state of Washington in 1938, Asian clams have since spread to 40 other states through the food and aquarium trade. Most notably, Asian clams are currently being combated in Lake Tahoe and Lake George.

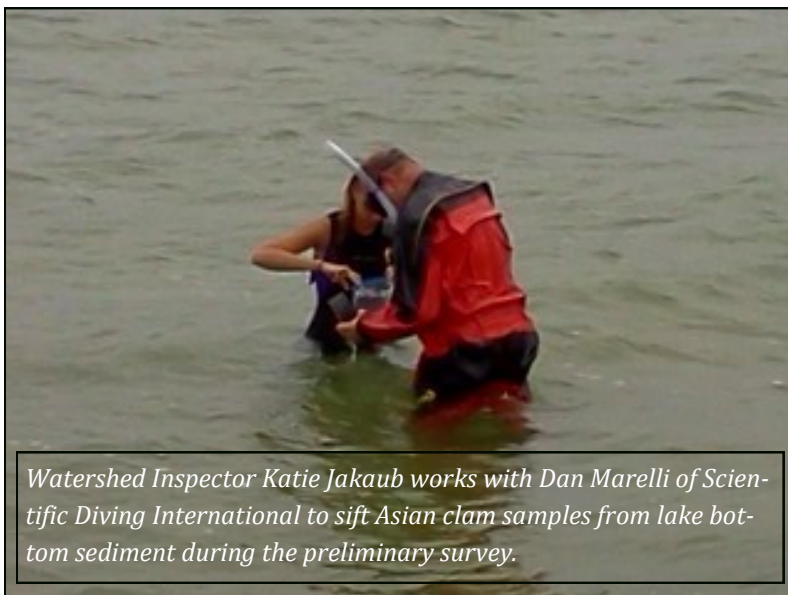
By July, WQMA had written a grant that was submitted to and received funds from the Fred L. Emerson Foundation. These funds allowed professionals from the Darrin Freshwater Institute, InnerSpace Scientific Diving and Scientific Diving International to survey for the presence and distribution of Asian Clams in Owasco Lake. By late July a preliminary survey was completed and confirmed the locations and outer boundaries of the Asian clam beds. The hired professionals trained volunteers and divers on Asian clam identification and survey methods. Assistant watershed inspectors assisted with both the diving and the survey work. And on August 5<sup>th</sup>, the professionals hired had submitted a written report outlining their findings. The report titled, "Preliminary Survey for Asian clams (*Corbicula fluminea*) in Owasco Lake, Cayuga County, NY" can be found on the WQMA website. Others participating and providing assistance with the survey were members from the Asian Clam Task Force, OWLA, CCDPD, Owasco Marine, Cayuga County Sheriff's Department Marine Patrol and Auburn Fire Department. Laboratory space was donated by Cayuga



*The above photo demonstrates the size and coloration of the Asian clam. They typically take on a yellow brown or light brown to black color with distinctive elevated, evenly spaced ridges on the surface and average the size of a dime or nickel.*

Community College to conduct the survey work. Also assisting with analyzing the sand samples were Dick Coalson from OWLA and Anthony DeCaro, Chief Water Plant Operator of the Auburn Water Filtration Plant.

The Task Force decided to lower Owasco Lake's level one foot lower than normal during the winter to freeze the Asian clams to reduce their population. DeCaro, began discussing the possibility of lowering the lake level during the winter with the United States Army Corps of Engineers in June. The CCHD researched shore wells as work continued on possibly lowering the lake level this winter. A letter was sent out from the Owasco Lake Watershed Management Council and WQMA to all lakefront property owners to prepare them for the lowering of the lake level.



*Watershed Inspector Katie Jakaub works with Dan Marelli of Scientific Diving International to sift Asian clam samples from lake bottom sediment during the preliminary survey.*

# Survey Results

Living Asian clams were located at the northern end of Owasco Lake in shallow water of depths ranging from 3 to 6 feet. One location to the west of the Owasco Lake outlet was recorded to be approximately 8 feet deep, but all other Asian clam populations were limited to depths of less than 6 feet. Because of the conservative methods used to determine population distribution it is likely that the 8 foot depth is incorrect.

An additional diving survey was conducted in September by members of the Asian Clam Task Force, OWLA and the Cayuga County Planning Department to more clearly define areas where freezing may not be an effective treatment method (deeper than 6 feet). Sand samples were also collected. This survey found that the clams go to 11 feet deep and lowering the lake that far is not possible, so other control methods will need to be discussed. The sand samples were collected to analyze for grain size to discover what bottom sediments the clams prefer.



*The aerial photo above shows the study area where the survey took place. The lines shown demonstrate where all density surveys were performed and the red lines indicate where living Asian clams were found in the sediment.*



*Upper : Steve Resler from Inner-Space Scientific Diving (left), Don Seitz from Auburn Skin Divers (middle) and Jeremy Farrell from the Darrin Freshwater Institute (kayak) prepare to conduct a survey along one of the transects.*

*Lower: (from left) Marelli, Resler, Jakaub and Eric Townsend from CCDPD, pose after the final transect was surveyed concluding the study.*



## Boater Surveys

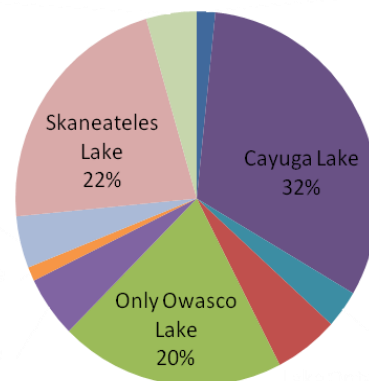
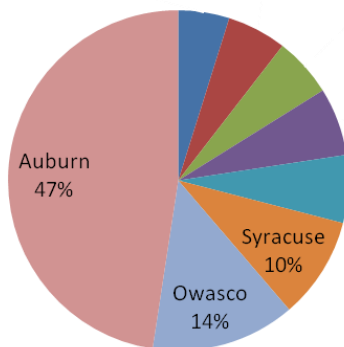
During the summer of 2011, assistant watershed inspectors completed 251 boater surveys of boaters launching watercraft at Emerson Park. The oral survey was a brief, oral and asked the following questions:

- 1.) Where are you from (Town, State)?
- 2.) What are you planning to do on the water today?
- 3.) What do you like about Owasco Lake?
- 4.) What other water bodies do you frequent?

This survey allowed OLWIP to achieve an accurate representation of the general boater, where they're coming from and what other water bodies their boat frequents. With this information, we are more easily able to identify the potential sources of other harmful aquatic invasives that may make their way into Owasco Lake and aid in the prevention of particular species from spreading. From this survey, OLWIP was also able to attain information that will help cater to the average boater's likes and dislikes about the lake. Additional information gained from this survey will be important to OLWIP in future educational and outreach opportunities.

## Results

From the 251 boaters surveyed, we found that a majority (94%) of them were from New York State. Other states from which boater's were coming from included, Pennsylvania, Connecticut, Florida, Massachusetts, and New Jersey. The water bodies most often frequented by the local boaters surveyed included Cayuga Lake, Skaneateles Lake, the Seneca River, and Oneida Lake. Many of the out of state boaters owned boats that had recently frequented water bodies of which have invasives unknown to Owasco Lake. Inspectors discussed more intimately with these boaters the consequences of introducing a new invasive to ensure prevention of a infestation.



Also discovered during the survey were 12 yellow perch (from a catch of about 30) with red sores in various parts of their bodies. It was later confirmed that the ulcers were caused from "Red Sore Disease." Typically, red sore disease is caused by two organisms, *Aeromonas hydrophila*, a bacterium, and *Heteropolaria sp.* (formerly *Epistylis sp.*), a protozoan. Red sore disease will often run its course, and fish may recover without treatment. The disease is not dangerous to humans and fish caught with this condition are safe for human ingestion.

*Yellow perch infected with red sore disease.*



## Sucker Brook Surveys

Sucker Brook is one of the primary contributing water bodies to Owasco Lake. Its main channel is 6 miles long and its watershed covers 9.1 square miles. As much as Sucker Brook is a contributing water source, it is also a main contributor of sediments, nutrients and pesticides from streambank erosion and row crop agriculture to Owasco Lake.

As an extension to the Sucker Brook Streambank Management Plan conducted in 2003, a basic survey of Sucker Brook and all of its tributaries was completed this summer by assistant watershed inspectors. During the survey, they collected data such as substrate types, flow regimes, bank conditions and other general properties of both in-stream and corridor characteristics. The purpose of this survey was to identify additional areas of concern throughout Sucker Brook and aid in its bank restoration to reduce sediment and nutrient loading into the lake.



## Onondaga County Septic System Inspections

There are approximately 4,060 septic systems within the Owasco Lake Watershed (Cayuga County—2,990; Tompkins County—1,000; Onondaga County—70). The 2,990 septic systems of Cayuga County are inspected periodically to ensure all systems are functioning properly and to prevent and treat failures. Cayuga County is one of the only counties in the state that require these inspections, therefore leaving the 1,070 septic systems in the neighboring counties within the Owasco Lake Watershed, unchecked. To tackle this issue, OLWIP initiated inspection of all septic systems on properties in Onondaga County and the Owasco Lake Watershed in November 2011.

Property owners were notified by post-card a week before the inspections began. The inspection consisted of a very basic walk-around of the property to locate the system. Once the system and its leach field were located, OLWIP searched the area for any signs of a failure, such as thick, green, overgrown grass, a foul odor, or discolored water leaching from the ground. In many cases, the property owner was happy to assist us, helping us locate their leach field and offering any additional information about their system.

Out of the 70 septic systems in Onondaga County that reside within the Owasco Lake Watershed, 25 were either recently installed or inspected so OLWIP felt it wasn't necessary for an inspection as to avoid redundancy. Four homeowners declined and the remaining properties were inspected, producing no failures.

OLWIP plans to continue routine septic system inspections with those properties situated in Onondaga County and to also begin inspections of properties situated within the Owasco Lake Watershed portion of Tompkins County.

## Additional Tasks

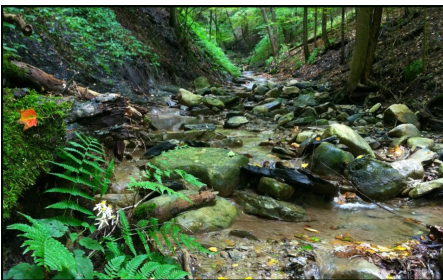
**Water Sampling** – OLWIP continued working with OWLA and CCDPD in 2011 to complete water sampling at 11 points throughout Owasco Lake and its tributaries. 2011 sampling was a continuation of the same sampling that took place in 2010. Sampling occurred once a week from June 28th and continued until September 31. A complete data analysis report about the completed water sampling was written and can be found on the OWLA website at [www.owla.org](http://www.owla.org).



**Ditch Inspections** – Every spring, many watershed municipalities dig out road side ditches alongside many of their roads. During this time, OLWIP performs ditch inspections and records the length, width and locations of any bare ditches found. After a newly dug ditch (such as the one on the left) is recorded, the information is passed to CCSWCD who then seeds and mulches the ditch with their hydroseeder. This helps keep the newly exposed soil stabilized once the seeds have established roots. This is crucial to the prevention of sedimentation into nearby tributaries outletting to Owasco Lake. A total of 64 ditches were found this year that were in need of stabilization.



**Firelane Inspections** - Each year, OLWIP performs inspections of every firelane surrounding Owasco Lake. Inspectors look for any violations or water quality concerns such as failing septic systems, dumping of refuse, incorrect erosion and sediment control practices, etc. The most common violation found were burn piles situated along the shore line and yard waste being deposited in the lake. Right: A burn pile located in the direct path of a stream is what is typically found during feeder stream and firelane inspections.



**Feeder Stream Surveys** - Feeder stream surveys were also completed for all 41 streams feeding directly into Owasco Lake. The first 1,000 feet of each stream was inspected by foot. Surveys began at the mouth and inspectors worked their way up stream for about 1,000 feet looking for violations and water quality concerns such as dumping of refuse and yard waste and significant bank erosion. This survey was a continuation of the surveys completed in 2008 and 2009.



**Agriculture Environmental Management (AEM)** – The AEM program is a statewide agricultural program administered through each county's soil and water conservation district. AEM uses a tiered approach that assesses farms on a voluntary basis. Each farm analysis looks at the environmental impacts of the farm and compliments good practices that are already in place. From the compiled plan, solutions to water quality issues can be determined and improvements can be made. Since August 2011, OLWIP has worked on five different projects within the watershed that include AEM involvement. *Watershed inspector Katie Jakaub assists CCSWCD's Grazing Specialist Jason Cuddeback with an as-built survey (tier 4) on a horse farm within the watershed. (right).*



## Education and Outreach

The watershed inspector's job is to not only identify concerns that could potentially harm the quality of Owasco Lake and its tributaries, but to also take part in outreach and educational activities to inform those living in the watershed and for those receiving their drinking water from the lake how important it is to protect the watershed. During 2011, OLWIP worked alongside various organizations and agencies to complete a number of these activities such as:

- ◇ Took part in the Water Quality Symposium
- ◇ Interviewed with Erik Sorenson from WAUB Fingerlakes Radio.
- ◇ Manned a display at Owasco Lake Day
- ◇ Took part in the Conservation Skills Workshops
- ◇ Presented at CCSWCD's Conservation Field Days. Discussed with local 6th grade students the concept of a watershed by using the watershed model to demonstrate how pollutants effect the environment.
- ◇ Presented to PBHS's Careers in Science Class. Discussed with high school juniors and seniors the importance of protecting water bodies and their watersheds and what they can do to get involved and to pursue a career in watershed and natural resource management.
- ◇ Attended a Sempronius Town Board Meeting to encourage their involvement in the protection of the watershed
- ◇ Attended the SLWAP Annual Meeting with CCSWCD's Executive Director, Ron Podolak.
- ◇ Toured the Skaneateles Lake Watershed with Rich Abbott of the City of Syracuse's Department of Water.
- ◇ Submitted 9 EcoTalk articles to The Citizen



*A dew laden spider web, found during one of the Sucker Brook surveys, drapes across low hanging branches in the early morning fog.*