

CREEK CONNECTIONS LINK

HAPPY
HOLIDAYS!



Volume #9 Issue #2

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Newsletter for CREEK CONNECTIONS

Based at
Allegheny College's
CEED
Meadville, Pennsylvania

Drake Awarded for Teaching Excellence, Leads Stream Restoration Project #7



Maplewood students secure stream bank fencing to keep livestock out of Little Sugar Creek.

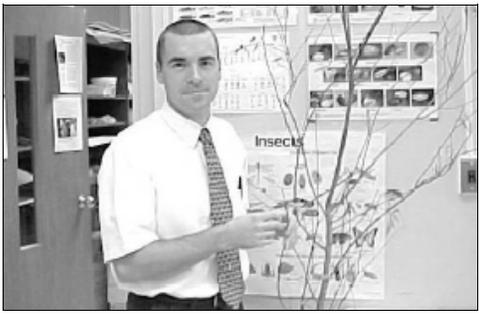
by Nicole Mason, Creek Connections

Humble. Heroic. Legendary. Inspirational. Brilliant. Who embodies all of these qualities? Neo from the *Matrix Revolutions*? A superhero? At Maplewood High School, Mr. Drake is that real life superhero. In 10 years as a biology teacher in Randolph Township, Mr. Drake has touched the lives of countless students, parents, colleagues and community members, inspiring them to do more, to effect change, and to make a difference. He has led seven groups of over 100 students in stream bank restoration projects since 2000, planting over 12,000 trees and live stakes on farms and in riparian areas throughout Western Pennsylvania. And his incredibly effective teaching style has been described as “so much fun” and “magic”.

All too often, outstanding teachers such as Mr. Drake don't receive the recognition they deserve. But the Milken Family Foundation has a knack for seeking out excel-

lence and duly rewarding it. On October 22, Mr. Drake was honored with the \$25,000 Milken Family Foundation National Educator Award. True to form, Mr. Drake attributed his success to his students, family, and colleagues, saying, “You're incredible people to work with. You deserve this as much as I do – I accept it on your behalf.” Even after just two years of teach-

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Award-winning teacher, Jason Drake, in his classroom at Maplewood High School.

Salt & Sand in Winter Waterways

Winter has arrived, and with winter comes slippery sidewalks and icy roads.

To battle these conditions, the Pennsylvania Department of Transportation applies chemical de-icing agents and abrasives to roads throughout the state. During the months of November through January, the roads of Pennsylvania, like most in the Northeast and Midwest, receive large doses of salt and sand combinations. Together, salt and sand help to melt snow and provide traction. However, a large percentage of these products end up in streams, rivers and



Departments of Transportation across the nation are exploring environmentally friendly alternatives to road salt and sand.

by Lindsay Herendeen, Allegheny Student

lakes as a result of runoff, plowing, and splash from motor vehicles. In return, these chemicals and abrasives have negative effects on water quality. Each year, local and state governments spend millions of dollars on water clean up from road salt.

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CREEKER CREATIVITY

This section of the Creek Connections Link features pieces by participating students related to their watershed discovery experiences. Let the poetry, prose, songs, limericks, drawings and other forms of creative writing flow from your pens like water running downstream. Become famous and have your creek creativity published in the next issue of the Link!

Checking Up on French Creek

This year, Mr. VanEarden's College Prep Biology class will be applying their time and energy to monitor the water of French Creek. Clymer students take a brief field trip once a month to the section of French Creek by King Road, behind the French Creek General Store. There, students work with college students involved with the Allegheny College Creek Connections program to sample the creek water and record such variables as turbidity, pH, and dissolved oxygen.

The first trip included Clymer sophomores Monte Bailey, Seneca Booth, Jennifer Geotzinger, Jeremy Claypool, Daniel McCray, and myself. Wearing hip waders to acquire samples, we spent about an hour conducting our experiments and analyzing our results. We learned a lot about making precise measurements, using patience, and

how to walk in hip waders. After obtaining our water samples, we used a small net to drag the water for small fish and aquatic insects. We also flipped rocks looking for crayfish. We caught a few insect larvae, seven crayfish, but sadly, no fish.

After we finished recording our data, we went to a pond on a private parcel of property. There, we also sampled the pond's water and compared it to the French Creek water. We found that the creek water had a higher turbidity, but that the pond had more algae. We didn't catch any fish at the pond either, but we did bring back water to examine under a microscope. In class, we found microscopic organisms like Cyclopes (organisms with a single red eye), Daphnia, and microscopic larvae in the water. Afterward, we returned to our regular classes.

All in all, the trip was very educational

by Erin Bernik, Sophomore, Clymer Central School

and also quite entertaining. My personal highlight was when Monte almost fell into the creek. I liked getting to talk to the college students and being outside in the fresh air instead of being in school. I hope that I get to go again very soon.



Clymer's French Creek sampling site near King Road and the French Creek General Store.

Brown Rubber Waders

By Chris Hughes

Seneca Valley Intermediate High School

I slip my socks into the
Brown rubber waders,
And descend the bank
Glurpsgillsplunk!
My toes maintain temperatures
Even though the crisp autumn
Air has chilled the creek
And I concentrate
Balancing, stepping in my
Brown rubber waders
The water trickles over my
Skinny hands as I fill the samples
And I hear cheering sarcastic voices
From land,
Knowing that they're missing out
If they never slip into those
Brown rubber waders.



Water Flows Through

By Lauren Sullivan

Seneca Valley Intermediate High School

Water flows through
The crisp morning breeze,
Carrying many parts
Of nature with ease,
Windswept and flowing,
Never stopping nor slowing,
The river cuts away
A path through the trees.

When you step in,
You can't help to cringe
As your toes are pinched with the
coldness of ice.
You continue to wade,
Emerging from shade,
The sun on your face seems to feel
quite nice.

Looking around,
You hear no sound,
But the trickle of rain from the sky.
Fish calmly swim,
Sometimes reaching water's brim,
As if they were trying to fly.

You wish to stay here,
With no worries or fears,
Until the sun sets and the moon now
looms,
But you will return,
The next day to learn,
That the river will continue,
and always resume.



By Dave Rocco

Seneca Valley Intermediate High School

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Salt & Sand in Winter Waterways

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Salt is applied to roads to speed up the process of melting snow. Most road salt is applied just before or during the beginning stages of snowfall because it dissolves in the water and lowers water's melting point so that snow melts faster than it accumulates.

Since salt has a high solubility, it dissolves readily in water and is easily transported with runoff, contaminating surface water and groundwater. As salt levels increase in a body of water, total dissolved solids also increase. If total dissolved solids become too high, aquatic life has trouble executing basic life processes such as respiration and photosynthesis. High salinity in groundwater can also contaminate drinking water and water used for irrigation; that can have potential negative human health impacts. Salt-laden runoff can even damage riparian (streamside) vegetation, inhibiting its ability to buffer the waterway against the salt inputs.

Sand is used as an abrasive to help motor vehicles get traction on slippery or icy road surfaces. Pennsylvania uses some form of sand or stone to fulfill this purpose. Although sand is beneficial for traction, it does little to get snow off the road and must be combined with salt or other chemicals to be effective.

Since sand and stone do not dissolve in water, they are transported with runoff as snow begins to melt. If too much sand is applied to the roads, it can clog the drainage

systems that would normally transport the sediment rich runoff to sewage treatment plants. Instead, the sediment enters the nearest creek or waterway. In large amounts, sand can increase turbidity, making life processes difficult for macroinvertebrates by clogging their gills. Sediment buildup can also disrupt habitats by filling cracks and crevasses. To make matters worse, sand can absorb and transport oil and other pollutants into waterways. Sand-clogged drainage systems can even lead to flooding.

De-icing agents are not beneficial to the environment, but are necessary for safe transportation in the winter months. The future of de-icing looks promising as state departments of transportation research techniques for de-icing in a more environmentally friendly way. For example, calcium magnesium acetate is being evaluated to replace salt because it melts snow as efficiently but with fewer consequences on water quality. The Salt Use Improvement Team at the University of Michigan recommends magnesium chloride as a salt and sand alternative. These and other more eco-friendly products are slightly more expensive than conventional de-icers but this cost is outweighed by the important ecosystem functions that they protect. Many states are also creating stricter requirements regarding the storage of road salt and sand in attempt to prevent disastrous leaks. Other preventa-

tive measures being taken by departments of transportation include natural snow fences along open stretches of highway like the one planted by Maplewood High School last year, and pre-treatment of roads before snow piles up. For now, states in the Northeast and Midwest, including Pennsylvania, must continue to battle the economic effects of salt and sand on the environment.

Winter is here and streams may begin to freeze over, but water quality issues are still prevalent.

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Waterways near roads, such as this Seneca Valley site, are affected by road salt and sand.

Creek Critters Prepared for Winter

The snow plows and salt trucks of the Pennsylvania Department of Transportation aren't the only ones preparing for winter. The bugs are ready for the big freeze, too. As the winter snows begin to fall many of you may ponder, "What happens to all the stream bugs during the winter?"

Benthic macroinvertebrates have adapted

to the cold winters in Pennsylvania using a wide variety of techniques. Many burrow into the stream bottom in the mud and leaves where it is warmer. One advantage of living in a stream is that the underwater temperature rarely drops below freezing. So when the air temperature is a blustery minus twenty degrees, the aquatic macroinverte-

brates are enjoying rather balmy minus one degree Celsius conditions in stream pools and minus two degrees in riffles.

Another adaptation to cold conditions is that many insects (e.g. dragonflies, damselflies, black flies, caddisflies and mayflies) have life histories where their egg, larval, or pupae stage is during the winter and their terrestrial stage is during warmer seasons.

Since these animals cannot regulate their own body heat they have found ways to cope with temperatures near freezing. One way is to secrete compounds that act like antifreeze so their bodily fluids don't freeze. Another method is to allow some freezing of their extracellular tissues, which can protect against freezing of intracellular tissues. Yet another strategy used by some dragonflies is to migrate to warmer environments.

Don't worry about your creek's critters. They're as prepared for winter as you are!



Illustration by Debra Solomon

Allegheny Students-Creek Teachers Partnerships Continue

by Cassandra Hamilton, Jackie Stallard, Ellen Smith, Nicole Scatena, and David Hall, Allegheny students; introduction by Nicole Mason, Creek Connections

Since 2001, Creek Connections project assistants have been partnering with regional teachers to gain teaching experience and enhance hands-on learning in these classes. This effort was formally funded during the 2001-2002 and 2002-2003 school years by the Independent Colleges Office Teacher Scholar Program (TSP) through the National Science Foundation; however, Creek Connections was so pleased with the results of the collaboration that it has continued the TSP model even after that funding came to an end. This semester, TSP has manifested itself in a number of ways and, remarkably, all of the project assistants that took part in these endeavors were Creek Connections participants in high school! Kudos to their high school teachers for inspiring them to teach! The following are Creek Connections project assistants' accounts of their teaching experiences this semester.

Cussewago Elementary School Partnership

by Cassandra Hamilton

In November, four Allegheny students traveled to Cussewago Elementary School to teach Mr. Shorts and Mr. Dzurko's 5th grade gifted class about wetlands. Trying to teach a 5th grade class of twenty-two students can be quite challenging for a small group of Allegheny first year students. But by allowing the students to learn about wet-

lands through interaction, they became more attentive and engaged.

The college students discussed separate topics about wetlands: the functions of a wetland, the effects of point and non-point source pollution on wetlands, wetland habitats, and the different types of wetlands.

Each Allegheny student developed his or her own method of interaction with the young children including using matching games, showing them interesting objects, and asking them questions in order to keep their attention.

To summarize what they had learned, each 5th grader constructed his or her own wetland in pop bottle terrarium. They used peat, moss, and live worms to build wetlands and seemed to thoroughly enjoy the educational experience. Hopefully they took their terrarium home and showed it to their family and friends to tell them what they learned about wetlands on that exciting day.

Fort LeBoeuf High School Partnership

by Jackie Stallard

Through TSP I have been working closely with Mr. Dobi's Advanced Biology class, comprised of 11th and 12th grade students, at Fort LeBoeuf High School. I am assisting the students of his class in creating lesson plans for watershed activities to use in middle school classrooms. They will ac-

tually be taking these activities to the local middle school and teaching the younger students using the activities they created.

On my last visit to Fort LeBoeuf, we conducted various experiments on groundwater in the classroom using the groundwater simulator. We discussed plans of possibly creating Fort LeBoeuf's own water simulator to use in various lesson plans and to share with other students at the symposium in the spring. The students had not previously worked with the simulator, and it was rewarding to see how well it assisted in conveying important groundwater concepts.

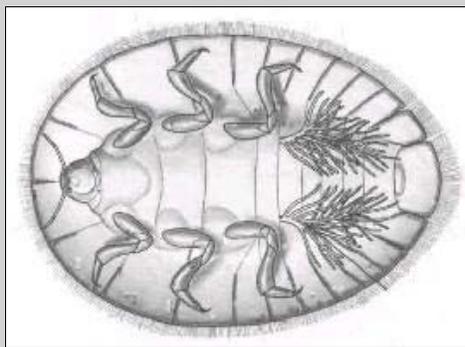
[Jackie, along with project assistant Mary Zoller, also led the activity "Water Filtration in the Classroom" in Mrs. Jacobs' class at Conneaut Lake Jr./Sr. High School earlier in the semester. The students were amazed that simple contraptions made out of pop bottles, gravel, and fine and coarse sand were able to drastically improve the clarity of water samples.]



Feature Creature

I am the single most common, abundant, and distinctive aquatic insect in North America. I usually live at the bottom of streams, lakes, and rivers, attached to stones in areas of riffles with moderate to fast currents. I like to hang out at the bottom of rocks during the day. At night, I come out and feed on the most nutritious algae on the surface of the water.

I am 4-6 mm long in my larval stage with either a tan, brown, or black coloration. I have an oval, flattened body and a claw on each of my legs. My flat body tends to conform to the surface that I am clinging to, making it hard for others to detach me from rocks and stones. The best way to pick me up is with forceps or fingernails. Can you believe that trout



want to pluck me from the substrate?

I am known to be a scraper because I eat thin layers of algae off of rocks. My jaw has a thin sharp inner edge, much like a paint scraper. I obtain dissolved oxygen through my gills on the underside of my body, but I can also obtain the oxygen through my general body surface.

by Nicole Scatena, Allegheny student

It takes me one to two years for my complete metamorphosis, and I do go through *complete* metamorphosis. The funny thing is, no one really knows a whole lot about my adult stage. It is assumed that it is short lived and I do not feed in that period of time.

I am very sensitive to pollution, making me a good water quality indicator.

Oh yeah, and if you haven't already noticed, I look similar to a familiar coin.

Do you know what I am? What is my common name? What order and family do I belong to?

Answer can be found on page 8.

Allegheny Students-Creek Teachers Partnerships Continue

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Youngsville High School Partnership

by David Hall

Developing a partnership has allowed me to work several times with Mrs. Dorunda's eighth grade environmental class. It has been a good experience for me returning to work with the same class and the students have benefited by seeing new materials that are not available at their school. On my first visit I led students through a lab activity that taught them about streamside critters. The real animal pelts and the plastic castings of various skulls fascinated the class. On a second visit I introduced the class to topographic maps for the first time. Even though they had never even seen a topo-map before, the students dug in and gained some valuable knowledge about the uses of topographic maps. During an upcoming visit the class will be learning about wetlands plants and identification by use of dichotomous keys.

French Creek Learning Center Partnership

by Nicole Scatena

Three first year Allegheny students visited the French Creek Learning Center in November to work with a class of seven 2nd-6th graders. It was challenging to engage such a wide range of students but the activity provided various areas of interest so that each student could connect with something. Students learned about the habitats, importance, and interesting uses of macroinvertebrates via live macroinvertebrates, macro cards, and power balls. A questionnaire evaluated how well the activity went and measured students' understanding of the topic. Sometimes students do not like busy work, so bug candy was used as an incentive, and boy did that work! It was nice to see students so enthusiastic about answering questions. Overall, the activity was a great success; the students enjoyed the experience and now have the ability to identify those macros on their own!

General McLane High School Partnership

by Ellen Smith

This semester I've been visiting Mrs. Yonko's 4th period 9th grade environmental biology class every other Tuesday. In class the students have been learning about soils, water pollution and Pennsylvania wildlife. During my visits I have done different activities related to the material they've been covering in class. As part of a transition from the soil unit to the water unit I led a presentation on groundwater using a groundwater simulator. During other visits I've helped the students learn about different sources of pollution and how to track pollution. More recently we've done activities related to environmental laws and wetlands and the students worked together to identify wetland plants using dichotomous keys.

I hope to go to graduate school to pursue a teaching degree and the TSP experience has been excellent preparation.

Drake Awarded for Teaching Excellence, Leads Stream Restoration Project #7

ing, Mr. Drake's commitment to expanding learning outside the walls of the classroom and into the community was evident when he became the first teacher to participate in Creek Connections in the history of the project. In the eight years since then, Mr. Drake has been a superb role model and advocate of experiential learning. Junior Sonia Firster said that Mr. Drake is always getting students out in the field, "doing hands-on projects that help the environment."

Mr. Drake's students are proud of him and thrilled to have the opportunity to work with and learn from him. This sense of gratitude was apparent as over 100 Maplewood High School students came together on November 5 to implement the seventh stream bank restoration project since 2000. AJ Jenkins, a senior, said, "It was really nice for Mr. Drake to get that award and to be recognized for all that hard work." The students on the restoration team put in their share of hard work that day too, as they installed best management practices (BMPs) on the Johnson Farm.

In just five hours, they planted 1,500 live stakes along the stream bank, including red osier and silky dogwoods and elderberries, all of which they had collected themselves earlier in the week. The live stakes were

planted within 15 feet of the stream channel and were easy to drive in as the area was saturated. The ground wasn't the only thing that was wet. Many students discovered that "boots have limitations," as Brian Pilarcik, Watershed Specialist for the Crawford County Conservation District and key organizer of the effort, joked while he was down in the trenches planting live stakes too.

While the live stakes group tried to stay dry, other students planted more than 700 serviceberry, pin oak, sweet gum, green ash, white ash, and red maple trees further upland. The trees and live stakes were planted to "stop the flow of cow manure that's coming into the stream," described junior Holly Welsh. Her classmate Sonia Firster explained that the live stakes and trees "reduce the flow of sediment, and allow banks and floodplains to form so massive floods don't occur." A third group of Maplewood students installed 2,500 feet of six strand, hi-tensile stream bank fencing which will keep the cows, sheep, and llamas from trampling the stream banks and defecating in the small tributary of Sugar Creek. One student described the fencing project as "a lot harder than it looks".

A new aspect of this restoration project was a clean up effort to remove tires, a dead

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cat, plastic, bricks and wood from the creek. Maria Anderson, Maplewood class of 2003, who had led similar stream restoration projects during her high school career, was back to lend a hand. It was clear that students really appreciated her taking a day off from college to help out. Two other Maplewood grads, Ed Holcomb ('00) and David Hall ('00 and a Creek Connections project assistant), were back to share their experience and expertise from past projects with this year's crew. Other experts on hand included Mark Lewis of the DCNR Bureau of Forestry, Ron McCorkle of NRCS, Alice Sjolander and Darran Crabtree of the French Creek Project, and Scott Sjolander of Penn State Cooperative Extension. Mrs. Sjolander recounted how the farm's previous owners had also installed BMPs and that the Johnson's were "excellent stewards". Mr. Drake's students certainly get Creek Connections' commendation for environmental stewardship as well!



Leaf It in Cussewago Creek!

In October, Northwestern High School Biology 2 students placed six leaf packs (three at each site) in Cussewago Creek as a means of assessing the aquatic macro life over a period of several weeks. Leaf packs were chosen over kick nets to try and get a truer, long term picture of the macros living there.

On 11/19-20, the Bio 2 classes pulled the leaf packs from their two Cussewago Creek sites. Or should we say "attempted"...the Center Rd. site is naturally deeper, and due to the water level, two packs were unable to be retrieved. In fact, ice cold water found it's way into chest waders that day...brrrrr!!!

We discovered the value of placing multiple leaf packs, and noted the need to place them in more accessible locations next year!!

The Crossingville Rd. site had three very prolific packs, with close to 100 mayfly nymphs, approximately 60 stonefly nymphs, and several case building caddisflies. Also, an assortment of snails, crayfish, and beetles were found. Unfortunately, the diversity was a bit low, which caused the overall biotic index to be in the high "fair" range, even though there were an abundance of pollution sensitive macros. The water quality tests were consistent with the biological analysis, with no numbers outside normal ranges.

by Ms. Bucsek, Northwestern High School teacher

Students then planned and made presentations on water chemistry tests to "teach" their classmates the human impacts on overall stream health. There were power point presentations, posters, simple experiments and demonstrations, including a toy bulldozer simulation of disrupting a riparian zone! They discovered that a healthy riparian zone was of major importance to every test parameter.

Finally, the students wrote an essay summarizing the combined importance of biological analysis, chemical tests, and environmental/land use inventory in assessing overall stream health.

by Nicole Davis, Kendal Sundback,
Owen Rader, & Joel Chapman,
Conneaut Valley High School

Hellbender Population Discovered in Conneaut Creek

Conneaut Valley High School's Environmental Microbiology Class with Mr. Bocan has been monitoring three sites along Conneaut Creek in NW Pennsylvania.

Conneaut Creek is the only watershed in Crawford County that flows North into Lake Erie instead of South into the French Creek/Allegheny River Watershed. It is composed of three branches: the Main Branch, the East Branch, and the West Branch.

The total length of the Main Branch of Conneaut Creek from its headwaters to its mouth is 58.6 miles. The total drainage area of its watershed is approximately 191.2 square miles.

The sites we monitor are located at Dicksonburg Bridge, an area of woodlands and pastures on the upper reaches of the creek several miles from its headwaters. Depot Street Bridge, just north of Conneautville Borough, is an area downstream of the first

municipality/urban center on the creek. And Shadeland Bridge, north of Springboro Borough, is an area downstream of the Valley Area's municipal sewer treatment facility.

In addition to the collection of the standard chemical parameters of the water, the class conducted macroinvertebrate surveys of the three sites using standard kick-nets and calculated a pollution tolerance index for each site.

The water quality score at each site was greater than 40, indicating generally good water quality for our section of Conneaut Creek.

Recently several *Cryptobranchus alleganiensis* (Eastern Hellbenders) were observed in Conneaut Creek just south of Springboro. This is the first time that we have had any positive proof of the existence of a hellbender population in the creek. One individual was netted. It measured thirteen inches in length and was observed for sev-

eral minutes before being released. This was just one more indicator of the generally good water quality in our section of the creek.

Currently, we are beginning to conduct our bacterial testing of the waters of Conneaut Creek. Over the next six weeks, we will be conducting total coliform and fecal coliform tests at our sites. We are looking forward to our upcoming tests and have had an awesome experience thus far!



Credit: PA Fish & Boat Commission



Testing Tip:

Avoiding Iron Test Contamination

To avoid getting inaccurate Fe test kit results caused by the reaction of the liquid in the FerroZine Iron Reagent Solution Pillows with the metal in the scissors or clippers you are using to open the pillow, be sure to:

1. Avoid using rusty scissors or clippers to cut open the solution pillow;



- by Nicole Mason, Creek Connections
2. Wipe off the scissors or clippers before cutting open the solution pillow;
 3. Hold the solution pillow straight up and down so that all the liquid is in the bottom of the pillow;
 4. Wipe off any purple color that develops in the cut area of the solution pillow before adding the contents to the water sample.

From Creek to Creek - NWPA & NY School Updates by Nicole Mason, Creek Connections

Bethesda Children's Home...Ms. Smith's class has been out to Woodcock Creek a number of times to do aquatic life surveys. Using graphs, they will be comparing the different macroinvertebrates they found upstream and downstream of Woodcock dam.

Cambridge Springs Jr./Sr. HS...Mr. Porter's students have been comparing the results of numerous chemical tests at upstream vs. downstream locations, ponds vs. streams, and wells vs. streams. Cambridge Springs students also got to play a game on steelhead migration created by several of Creek Connections Director Jim Palmer's first year Allegheny students.



Clymer Central...See "Checking Up on French Creek" on pg. 2.

Cochranton Jr./Sr. HS...Mr. G and Ms. Ray's classes are racking up their data on Little Sugar Creek and exploring several possible topics for their individual research.

Conneaut Lake Jr./Sr. HS...Mr. Holt's classes' sampling is going well and they are exploring the idea of adapting their popular fish matching light up game from last year's Symposium to a new creek wildlife theme. Mrs. Jacobs' students are so good at their chemical tests that they barely needed Creek staff's assistance on a recent outing to Geneva Marsh. Mrs. Golenberke and Mrs. Spellman's classes finally got out to their Harmonsburg site to do macro sampling after being frustrated by poor weather on a number of occasions.

Conneaut Valley HS...See "Hellbenders Discovered in Conneaut Creek" on pg. 6.

Fort LeBoeuf HS...See "Allegheny Students-Creek Teachers Partnerships Continue" on pg. 4. Mr. Dobi's classes also got a chance to learn about water pollution and wetlands through watershed activity modules.

General McLane HS...See "Allegheny Students-Creek Teachers Partnerships Continue" on pg. 5. Mrs. Neuburger's students are preparing for aquatic life studies and to make their own aquatic life reference col-

lections. Map measure wheels for measuring stream length are en route to General McLane as well.

Maplewood Jr./Sr. HS...Mr. Greco didn't waste any time getting into the swing of things in his first year with Creek Connections. His classes are sampling downstream of a sewage treatment plant and collaborating with Mr. Drake's classes, who sample upstream of the site. So far, they have not detected any significant differences between the two sites but they'll continue to sample through the spring to see if things change seasonally. Also, see "Drake Awarded for Teaching Excellence, Leads Stream Restoration Project #7" on pg. 1 for more on what Mr. Drake's classes have been up to.

Meadville Area MS...Mr. Hayden isn't the only one teaching MAMS students how to do water quality testing on samples collected above and below Mill Run; one student also serves as a "teacher" for each test when they do their chemical sampling. And it's not just about going through the steps of the test for these creekers; they complete worksheets each time that make them reflect on different factors that could affect the various parameters and consider how a significant increase or decrease in a parameter could affect aquatic life and the watershed in general.

Meadville Area HS...Mr. Radnich has expanded Creek Connections at MAHS to include all of his 9th grade students and two upper level classes. With all those data, they'll be able to put together some pretty impressive research projects!

Northwestern HS...Riding the momentum of their Creek Day back in October, Mrs. Murray's and Bucsek's students continue sampling Cussewago Creek at two different sites near Albion. Creek studies at Northwestern have also been complemented by use of the aquatic life, fish, riparian buffers and wetlands modules. See "Leaf it in Cussewago Creek" on pg. 6 for more on Northwestern's activities.

Penncrest School District Gifted Program...See "Allegheny Students-Creek Teachers Partnerships Continue: Cussewago Elementary Partnership" on pg. 4.

Saegertown Sr. HS...Mrs. Statman brings Creek Connections experience and enthusiasm from her days at Grove City High School to her new students at Saegertown this year. Mr. Smith's students have had their hands full learning about aquatic life, water chemistry and watersheds using Watershed Activity Modules.

Seneca HS...Mrs. Polumbo wrote, "The Biology classes at Seneca High School began the fall semester studying wetlands and topography. Constructing cardboard forms of our watershed for an interactive role play game, "A Day in My Watershed," exposed the students to real life issues that threatened our wetlands and the laws that govern them. The late snow has enabled us to monitor water chemistry at our site through December without having to drill through ice. Happy Sampling!"

Sherman Central...Ms. Paul's students are quickly becoming creek experts, especially with the help of Allegheny students Dan Conant and John Domsic.



Sugar Grove ES...Mr. Heubach wrote, "At Sugar Grove Elementary, 6th graders have been working on testing Stillwater Creek and comparing their findings to other creeks in the area. Also, the students are brainstorming ways to show how the watershed works for Stillwater Creek for the Symposium. They are very excited about this and can't wait for the Symposium."

Union City HS...Modules galore! Already this semester, Mr. Keefer's students have learned about stream geology, riparian buffers, watersheds, and wetlands using Creek Connections Watershed Activity Modules.

Wattsburg Area MS...Modules have been hot commodities in Mr. Stack's classes as well. Aquatic life, aquatic macroinvertebrates, water chemistry, and fish are just a few of the exciting topics Stack has explored with his students. Their water sampling continues to go well, too.

Youngsville HS...See "Allegheny Students-Creek Teachers Partnerships Continue" on pg. 5. In addition to their work with Allegheny student David Hall, Mrs. Dorunda's and Vile's students already have a jump start on their independent research projects and will be preparing their displays in the near future. Watersheds, algae and plankton were also brought to life using Creek Connections' watershed model and microscopic organism materials.

Water Pollution

By Jackie Jacobs and Kaci Rupert
West Mifflin Area High School

What is dirty, smelly, and harmful too?
In some cases, drinking me would kill you
I flow through the earth
Impossible to stop
If problems arise,
Dead you may drop.
I kill underwater creatures
Plant life too
No one can stop me,
Not even you
But you can prevent
Problems from taking place
Leaving me go
Will turn into a disgrace
I'm a type of pollution
Can you guess?
Water pollution!
Right! Yes!



Now you know why I can kill
Polluting can make you ill
I may contain harmful chemicals
Metals too
By hurting me,
You're only hurting you
Hopefully you will reconsider
To keep me clean and never even litter!
Take care of me
I'll make a bet
If you do, you won't regret!

FEATURE CREATURE ANSWER

This issue's Feature Creature (pg. 4) is a Water Penny, Order Coleoptera, Family Psephenidae.

Connect to

CREEK CONNECTIONS

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