Real Science While Connecting with Creeks

by Chris Resek, Creek Connections Project Coordinator

Creek Connections welcomes all participating schools to our 8th year of watershed education. For most schools, the water monitoring is well underway. A year’s worth of water chemistry data is starting to be collected and compiled. Many of our schools are already busy learning about creeks and being visited by Allegheny College students and permanent staff.

In September, Allegheny College students and permanent staff had already made 47 visits to schools. These visits have included Interactive Introductions to Creek Connections presentations, water quality monitoring assistance, various aquatic life investigations, and other types of interventions.

One of the unique aspects of Creek Connections is the involvement of schools from two different regions of Pennsylvania – the more rural, less populated French Creek Watershed and neighboring watersheds of Northwest Pennsylvania and the more populated, urbanized Pittsburgh area. These two regions have different water quality issues that we hope you learn more about in the year ahead. You might discover which region is more affected by acid mine drainage, more affected by agricultural runoff, more affected by suburban sprawl, more affected by faulty sewage systems. As a result of differing land uses and human impacts on the waterways, the aquatic life surviving in a stream differs as

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Ellis Visits French Creek for Fourth Year

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of classroom presentations or activities. The “creekers” have traveled as far away as Clymer, New York and as close as Meadville Middle to help schools embark on their watershed education endeavors. Laura Branby, our Pittsburgh Field Educator, has been assisting schools in Southwest Pennsylvania.

“It has been a fun year so far, getting out and helping schools start up their creek adventures,” says Creek Connections Project Assistant, Ellen Smith. A sophomore at Allegheny, Ellen is one of fifteen “creekers” on staff.

Throughout this school year, each participating school will have the opportunity to monitor a chosen, local waterway using chemical tests and some observational exercises. Most schools also conduct biological monitoring of their waterways, discovering how many different types of aquatic life their creek supports.

Each participating school will also design and implement research projects about their waterways that might incorporate some academic research, field work, and creation of display presentations. If students do a good job on their creek research, they may be invited to attend a Student Research Symposium in April to showcase their work. Representatives from all participating schools attend the event to share their water monitoring results and their research projects. The day is filled with lots of colorful and educational displays from students and environmental organizations. Here, students also participate in hands-on activities about water-related topics.

We hope that all of our participating schools enjoy learning about their waterways, their health, their threats, their aquatic life, and their importance. Take advantage of this opportunity to spend time outside the classroom studying an important natural resource – water. Observe how your waterway changes over the seasons and discover how easy it is for humans to impact waterways. In the year ahead, maybe you will even discover how you can protect a local stream. Most of all, have some fun with this great learning experience. Good luck!

Our newsletter articles are also on-line: http://creekconnections.allegheny.edu.

Welcome New Creek Schools and Teachers!

Ms. E. Wright – Perry High School
Perry is part of the Pittsburgh Public Schools. Ms. E. Wright will be working with her students to study the creek which runs through Riverview Park. The park is right beside the school, making it the perfect place for the students to spend some time each month getting to know “their” waterway!

Ms. B. Wright – Schenley High School
Also part of the Pittsburgh Public Schools, Ms. B. Wright and her students will take over the Creek Connections duties for Schenley, which has been participating for the past 3 years, and will explore Schenley Park waterways.

Ms. Fineman – Morningside School
Morningside School is also part of the Pittsburgh Public Schools district. The school is very close to both the Pittsburgh Zoo & PPG Aquarium and Highland Park. Ms. Fineman’s students will monitor the stream in Highland Park… being very careful around that big reservoir and watching out for escaped tigers!

These three schools will be working within Pittsburgh City Parks, helping to improve and maintain waterway health and making Pittsburgh proud of its parks and students!

Mrs. Golenberke and Mrs. Spellman – Conneaut Lake High School
Conneaut Lake High School incorporates Creek Connections in a number of different grades and class subjects. Mrs. Golenberke and Mrs. Spellman add to the existing Conneaut Lake Creek Connections teacher team of Mr. Holt and Mrs. Jacobs. Conneaut Lake itself will be one of the new sites explored with the students.

Mrs. Dorunda –Youngsville High School
This school really gets into Creek Connections. Joining mid-year last year, they not only sample their creek, but do numerous, impressive research projects, hold their own symposium at their school (winners of this get to go to Allegheny College’s Symposium), and are involved in stream restoration/community improvement projects. They will be featured in the next newsletter.

Ms. Seymore–Sugar Grove Elem. School
Replacing Mrs. Howe, who took a new position in the school district, Ms. Seymore will have her students explore Stillwater Creek—from nymphs to nitrates, salamanders to sulfates.

Mr. McCullough and Dr. Check - Linesville High School
In the Pymatuning/Shenango River Watershed, neighboring French Creek, these students will work right next to their school and also at a beautiful upstream spot on Linesville Creek, a popular walleye
How could 7th grade students at Saegertown Jr./Sr. High School collect dragonfly larva, work with topographic maps, creatively write about French Creek, read about bald eagles, test for dissolved oxygen, learn some history, geology, and geography, all in the same day? Well, they could have a Creek Day.

On October 4, that is exactly what Saegertown did. Almost one hundred students participated in the first annual French Creek Day at Burstrem Park. The students rotated through seven different stations facilitated by their teachers, Allegheny College students and staff, and a guest presenter from the Department of Environmental Protection. French Creek was the unifying theme for all the “classes” they went through - science, math, social studies, English, and even physical education (there was a swing set to use during the lunch break). The teachers worked together to implement this great idea for their students. Students were exposed to a variety of creek topics which they will continue to revisit during the course of the school year.

At the topographic map station, one student challenge was to determine the distance of French Creek between Saegertown and Meadville, having to do all kinds of mathematical conversions to calculate the answer of 7.58 miles. Hopefully they will remember how many feet are in a mile from doing this practical math problem.

The Hach test kits were opened up for chemical testing to determine if the water was healthy. Chemical testing was followed by an exploration of geology topics - rocks, fossils, animals that used to be in the area, and about how their creek is influenced by our geology everyday. The geologic history was not the only topic from the past that was covered. A history station allowed students to envision themselves along French Creek during other time periods.

Students waded into French Creek for the biodiversity station, discovering that French Creek lives up to its reputation of having lots of different types of aquatic life. For many students, it was the first time they ever realized so many things lived under the rocks in the creek. Microscopes were used to take a close look at the caught critters.

Overall, you did not need a microscope to observe that the Saegertown students were exposed to a variety of creek topics which they will continue to revisit during the course of the school year.

Bethesda Children’s Home
Clymer Central School
Conneaut Lake High School
Fort LeBoeuf High School
Lakesville High School
Meadville Middle School
Northwestern High School
Penncrest School District Gifted Program
Saegertown Jr. High School
Sherman Central School

Cambridge Springs Jr/Sr High School
Cochranton Sr. High School
Conneaut Valley High School
General McLane High School
Maplewood Sr. High School
Meadville High School
Northwestern High School
Parker Middle School
Reizenstein Middle School
Seneca High School
Sugar Grove Elementary School

Northwest Pennsylvania / Southwest New York Schools

Southwest Pennsylvania / Pittsburgh Area Schools

Bethel Park High School
Carmalt Elementary School
Emily Brittain Elementary School
Langley High School
MOON AREA HIGH SCHOOL
North Allegheny High School
Perry Traditional Academy
Reizenstein Middle School
Seneca Valley High School
Springdale High School

Brashear High School
Frick Middle School
Ellis School
Greenfield
Letsche High School
Morningside School
North Hills High School
Prospect Middle School
Schenley High School
Seneca Valley Intermediate High School
Taylor Allderdice High School
well.

So if a Pittsburgh school wanted to witness some great biodiversity (different living organisms) in a stream, they might want to travel north to the French Creek watershed to find a good stream to explore. Ellis School did this.

In mid September, the Ellis School from Pittsburgh traveled to Northwestern Pennsylvania to explore various environmental topics and conduct field research. For the fourth consecutive year, one of their stops was French Creek for an aquatic life investigation and waterway assessment. Forty-two girls had the chance to discover firsthand the rich biodiversity of French Creek at Bicentennial Park in Meadville.

With kick nets in hand, the girls caught plenty of aquatic macroinvertebrates, including lots of pollution sensitive bugs like mayfly nymphs, giant stonefly nymphs, water pennies, and riffle beetles. A few different types of fish were caught including some darters, which typically prefer cleaner water, and some minnows. This was just a small subset of the 80 different fish species found in the French Creek Watershed. Some of these, such as the Gravel Chub and Spotted Darter, are on the U.S. Endangered Species List. The Ellis students also found some live and empty shell freshwater mussels. French Creek is lucky to have 26 different types of freshwater mussels, including the endangered Northern Riffleshell and Clubshell. Lastly, many different types of aquatic plants and algae were still thriving in the creek and some students discovered that this vegetation provides habitat for even more types of aquatic organisms.

“Each year we enjoy hosting the Ellis girls and giving them the chance to see how different French Creek is compared to the waterway they test – the Allegheny River in downtown Pittsburgh,” claimed Chris Resek, Project Coordinator for Creek Connections.

The Ellis girls will compare the insects they caught in French Creek with ones they will catch in the Allegheny River later this school year. In addition, Ellis usually makes some very thorough water chemistry comparisons between their site and other sites monitored by our Northwest Pennsylvania schools.

Again this year, the Ellis School enjoyed their time at French Creek. They had fun strapping on hipwaders, kick netting, taking a close look at their organisms, and witnessing the concept of biodiversity first hand.

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**Upper St. Clair Students Meet McLaughlin Run Macros**

For Upper St. Clair students each fall, catching various types of minnows is always a favorite. Observing the delicate damselfly nymphs under a microscope always sparks a new fascination. Watching a scud (sideswimmer) scoot around the white sorting tray in its unique sideways swimming style turns out to be entertaining.

These creatures, obtained from McLaughlin Run just down the hill from their school, were the focus of each new class, each period on October 3. Over 160 students participated in the day. They learned about the different ways to analyze a stream to determine its health, viewed various sampling methods to collect aquatic insects, and then attempted to find as much biodiversity in their creek as possible. Finding good biodiversity would indicate that their stream is healthy enough and has the appropriate habitats to support a variety of aquatic life. The students can relate their findings to the water chemistry testing that they do on other days, determining if the parameters are in ranges appropriate to support aquatic organisms.

Through explorations of the creek, the Upper St. Clair students also began to recognize the habitat requirements for some aquatic insects. A larger variety prefer well oxygenated riffles with clean rocks to cling to or to live under rather than the muddy, sediment filled, deeper pools. McLaughlin Run also has stretches that the solid bedrock bottom (large flat rocks) is exposed, providing no habitats for aquatic insects.

The next day in lab, the students took a closer look atore the aquatic insects that they caught, identified them, and recorded their data so that it could be compared to other years. Additionally, the students had a sample of aquatic insects taken from the French Creek to explore. Hopefully the students enjoyed their time at the creek and learned many new facts about some of the aquatic creatures in McLaughlin Run.

Above: Students were very excited about their aquatic life discoveries. This Upper St. Clair student scared something out from under a rock with her d-frame net.

Left: A kick netting duo takes time for a photo. These students learned where the best microhabitats in the creek were to find the most variety of aquatic macroinvertebrates. Habitat availability turns out to be an important factor for sustaining life in McLaughlin Run.
In the beginning, there was a trickle of water coming from a hillside. It ran under an asphalt structure (some might call it a road) and through to the other side. Two sets of measurements were taken of chemical makeup, temperature, and even light conditions to find out if the numbers changed as the water was exposed to air and light. Farther downstream, more measurements were taken, this time at “the volcano.”

So where were these water scientists conducting their research? In Pennsylvania? On the moon? Well, actually it was in Moon….Moon Township outside of Pittsburgh. But a volcano? When you are in Moon Township, anything is possible! Within the Montour Run watershed, Mr. Vogler’s Moon Area High School class collected data from two sites near an abandoned mine. The volcano is just a unique geological formation of terraced rocks that the water flows over and beside. This was just one stop for the day-long study; they traveled throughout the watershed getting a feel for the landscape and the human effects on it.

Four sites down and it wasn’t even lunchtime. It was time to take a breather at a local McDonald’s restaurant. Once everyone had filled up on hash browns and OJ, they were ready to face the next set of sites. It was a beautiful late summer day and they were off to a site beside the Montour Trail. The trail was built for runners, walkers and bikers to enjoy. It is heavily used throughout the year and this day was no exception. You get lots of interesting looks….and a few bicycle bells….when you’re dressed in waders and hanging out at the creek. Especially this creek, which is right beside an intersection of five roads. It is NOT a pristine, natural environment.

After completing their chemical work at this site, the students pulled out kick nets and got into the creek to look for macroinvertebrates. It was their first macro experience, so crayfish were a big hit!

The last stop of the day was near a sewage treatment plant alongside the Montour Trail. Mr. Vogler and the students took water samples from the deeper pool near the road and the trail. Next we moved upstream….through the creek…to a spot where a very small creek enters Montour Run. In the springtime this area is a favored spot for vernal pools and Jefferson salamanders. This time of year the small creek was dry in many spots. Gathering samples for chemical tests was difficult, but finding salamanders was not. They were under nearly every large rock! The students took photos to identify their catch, performed chemical tests on both the main stream and the smaller stream and called it a day. And what a day it was…four locations, ten different water samples, two sets of critters, and one group of hot, tired students. Congratulations Moon Area HS students and Mr. Vogler for traveling through Moon and beyond to develop a well-rounded understanding of your local watershed!

In commemoration of the 30th Anniversary of the Clean Water Act, October 18 has been designated as National Water Monitoring Day. This event is being sponsored by the America’s Clean Water Foundation (ACWF) and is part of Congress’s proclamation that 2002 is the Year of Clean Water.

Many of our Creek Connections schools will be testing their waterways on Friday, October 18 and participating in the nationwide database. This water quality snapshot throughout our region will be a fantastic data analysis opportunity. More information about the event and the results will be in the next newsletter. Learn more about the Clean Water Act on our website: http://creekconnections.allegheny.edu
From Creek to Creek - School Updates

This year, Parker Middle School continues to monitor three different sites/streets near their school - Parker Run, Pavkov Run, and Conneautee Creek. Breaking into three groups, students have been out several times already working on their chemistry techniques. The students have also learned about the watershed concept, used topographic maps to figure out stream lengths and stream gradients (how elevations change over a distance). They also used a groundwater simulator to discuss how water is moving under their feet, how the groundwater influences their creeks, and how to protect this underground resource. Many people in the area use groundwater as their source of drinking water.

Parker also writes, “Parker Run was alive with biodiversity on our Pollution Tolerance Index day. We caught crayfish, dragonfly nymphs, mayfly nymphs, water striders, water mites, stoneflies, whirligig beetles, midges, damsel flies, and a water penny. Four species of salamanders and three species of frogs were found. We also caught a caddisfly larva ‘condominium’ with 12 houses on one rock.” Net-spinning caddisfly larvae have the ability to glue tiny rocks to a larger rock with silk they produce to create a tubular retreat. If you pick up a large rock in your creek, look for these c add is fly homes.

C o n n e u t L a k e Jr. High School students get help from an Allegheny student finding bugs on their net.

Cochranton Research Results Were A Little Bit Fishy by David Hall, Chad Cochrane Allegheny students

Cochranton High School has really gotten into their creek work so far this year. The school has always done a fantastic job of really learning their chemical testing, and this year, more than ever before the students are investigating the aquatic life of Little Sugar Creek next to their school.

On September 16, Mr. Grzegorzweski and Miss Ray’s classes at Cochranton had a freshwater fish day. The students investigated the presence or absence of fish habitats and why habitat is so important to fish in a creek. The students tested for a few chemical parameters to determine if their creek was within an acceptable range to support fish life. Then they tested their theory and searched for caught fish in a variety of ways.

Fish caught during the day included: rainbow darters, greenside darters, long-head darter, emerald shiners, mottled sculpins, and the “Feature Creature” below. By far the most abundant fish caught were common shiners, which are in the minnow family.

The students learned some identification characteristics of fish. For example, the darters they caught are in the perch family and have two separate dorsal (top) fins compared to the one dorsal fin of the many minnows they caught. They also discovered that identifying different types of minnows can be very challenging because of the subtle differences.

Students measured and recorded the size ranges of the fish they caught. They also counted the number of each species, which turned out to be a pretty difficult task for the many common shiners swimming around in the large container. So they students learned a unique way to make count estimates based on a grid system—sometimes useful in field research. Using this approach, they estimated that they caught approximately 160 Cochranton students measure the length of one of the fish they caught.
**Feature Creature**

by John Domsic, Allegheny College Student

I may be a "hog," but keep me out of the mud! I prefer to live on the bottom of clean streams that are free of siltation and pollution. Therefore I am an indicator of good water quality. I spend most of my time foraging on the bottom of streams for any food that I come across, such as plant and small animal material. This makes me popular among my fellow fish in the water. They like to follow me around and eat any animals that I may disturb when I'm feeding. But, my "friends" don't return the favor. When I lay my eggs in the spring, minnows are waiting there to gobble them up. That's why I have to lay so many of them!

In the end though, the eggs that do survive grow up and become just like me. I have a brown, mottled back, which helps me to blend into the rocks on the bottom of the stream. And my size varies greatly between individuals. I can be anywhere from 6 – 22 in. long and weigh up to four pounds! So next time you're out at your stream, look for me. That is, if you can guess what I am...

Can you name this feature creature?

Answer can be found on page 8.
Testing Tip - Is It Clear Yet?

Doing the dissolved oxygen test, determine if your solution has turned clear during the titration process by placing the square mixing bottle on a white sheet of paper or against the white cap of the dissolved oxygen 3 chemical container. Disregard counting any drops that did not make the solution any clearer.

Brashear students check to see if their solution is clear.

School Updates - continued from pg. 7

Two different classes at Brashear High School worked together at their creek to obtain chemical, biological, and physical data. Brashear High School writes: “Our first trip to Squaw Run was a big success. The students were familiar with the chemical test kits because we had practiced using them in class several times before the trip. Students had a great time getting the boots on and getting into the creek. We began our biological inventory of the creek by finding and identifying the following: green caddisfly larva, planaria, water striders, pouch snails, gilled snails, water pennies, and crayfish. We also caught some northern two-lined salamanders, emerald shiners, blunt nose minnows, creek chubs, longnose dace, a Johnny darter, and this newsletter’s ‘Feature Creature’”. Mr. Miller had placed a minnow trap in the creek earlier in hopes of catching more fish, but no such luck. Some unusual bait ideas for next time include Saltines, Dog Chow, and gum drop candy.

FEATURE CREATURE ANSWER
This issue’s Feature Creature (pg. 7) is a Northern Hog Sucker.