

CREEK CONNECTIONS LINK

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Newsletter for CREEK CONNECTIONS
 Based at Allegheny College in Meadville, Pennsylvania

Oceanic Algae Species Cause of Fish Kill in Greene County

By John Milligan, Allegheny College Student

In some situations, failure to exercise caution or concern toward warning signs in a watershed can lead to unfortunate situations. One such example in recent news occurred at Dunkard Creek, a tributary to the Monongahela River that flows through Greene and Monongalia counties in Pennsylvania and West Virginia. Over the month of September, an algae bloom there killed some 16 species of freshwater mussels and 18 species of fish along a 38-mile stretch of the creek, according to the *Observer-Reporter* of Washington, PA.

In late September, the algae was tentatively identified as *Prymnesium parvum*, commonly known as “golden algae”. Golden algae is typically an oceanic or saltwater species, but chemical examination of Dunkard Creek revealed very high levels of total dissolved solids (TDS), chlorides (ie., dissolved salts), fertilizers (nitrates/phosphates), as well as an unusually high temperature. Considering these conditions, it is not surprising that the creek could sustain a bloom of oceanic algae.

As is typical in Southwestern Pennsylvania, the mining industry has been accused as a likely contributor to the unhealthy water conditions. Consol Energy’s Blacksville #2 mine operation, which lies upstream in St. Leo, WV, has released high levels of TDS and chlorides into the stream since 2002, according to the West Virginia Department of Environmental Protection. The mine is apparently considering the use of reverse osmosis or larger impoundments as measures to mitigate their discharge levels, but these plans are still under development. At any rate, it is interesting to see stories such as this that show applications of Creek Connections material with serious implications.

Note: The author would like to credit Bob Niedbala’s September 26, 2009 article in the *Observer-Reporter* for much of this factual information. The full text can be found at: <http://www.observer-reporter.com/OR/Story/09-26-fish-kill-algae>



Above: *Prymnesium parvum*. Photo from Texas A&M



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Ahoy! Creek on the Niagara

Creek Connections joined several environmental groups and agencies aboard the Brig Niagara in September. Pennsylvania Sea Grant partnered with the Brig to provide on-ship science programming for area schools. The day we sailed, students from Fort LeBoeuf High School and Erie Central Tech boarded for a 3-hour tour of science and maritime studies. Creek Connections covered the benthic macroinverte-

brate station. Other stations were presented by Sea Grant, Brig Niagara crew, Erie County Conservation District, TREC Regional Consortium, and Earth Force.

David Boughton, Maritime Education Specialist for Pennsylvania Sea Grant, is currently filling slots for spring programming aboard the Brig as well as other vessels.



Above: Crew and students aboard the Brig Niagara



Above: Creek Connections project assistants, Ian Armstrong and Sahar Arab show students some local aquatic macroinvertebrates and discuss how they are used in water quality monitoring.

Happy Halloween

Become a Creek FAN!

Creek Connections has two pages on Facebook: one for Creek Connections in general and one for Creek Camp. Our fans receive updates on what's Current in the Creek as well as posts of photos, articles and links.



Testing Tip

Alka-what?: Theory and practice behind the alkalinity test

By John Milligan, Allegheny College Student

Alkalinity is one of the most environmentally important tests that are done in Creek Connections field-work, yet the concept of alkalinity is frequently misunderstood by students. The alkalinity test is nothing more than an acid/base titration. In other words, when you are doing an alkalinity test you are doing a quantitative analysis by adding a known volume of dilute acid to a known volume of sample water.

The colors you see result from the acid/base indicator. Commonly (especially in Northwest Pennsylvania), methyl red is sufficient for the pH ranges of streams. When enough acid is added to overwhelm the buffering capacity of the sample water, the indicator molecules re-arrange and appear in solution as a different color. This process happens quickly (within one drop), so it is very important to look at your sample between each drop and take notice at the first sign

of a color change. Also, be sure to hold the eyedropper straight up and down to maintain uniform drop size.

Alkalinity is important to life in a stream because it is a “defense mechanism” against acid rain. Picture this: an evil crook walks up to a stream and pours a gallon of vinegar (an acid) into it. This could lower the pH in the stream and be harmful to aquatic life, but the free carbonates and sulfates dissolved in the water provide a “defensive” buffer and keep the pH from getting to low.

You will probably learn a lot more about buffers and buffering capacity in high school chemistry classes. In the meantime, it is good to know that this test is more than just a tongue twister of a word that involves a cool color change!



Feature Creature

By Mark Kirk, Allegheny College Student

I am a member of the minnow family who has a reddish brown to dark-olive colored back whose color fades along the sides and into a silver-white at the bottom. My dusky scales give me the appearance of being molted and I have a barbel on each side of my mouth. I am well known for having a large flabby snout which projects over the top of my mouth. I prefer colder and faster moving streams with gravelly bottoms. I prefer to feed on small insect larvae such as blackfly and midge larvae. I am very commonly used as a source of bait for fishing and appear throughout Pennsylvania’s waterways. Do you know who I am? (see back of newsletter for answer.)





Above: Creek Connections 2009-2010 Staff. Back row from left: Sahar Arbab, Amy Kerschner, Cameron Eddy; Middle Row: Kelsey Mitchell, Sara Salisbury, Brandon Goeller; Front row: Wendy Kedzierski, John Milligan, Ian Armstrong, Mark Kirk, Zach Piso, Lucas Carrión. Not pictured: Jim Palmer, Laura Branby.

FEATURE CREATURE ANSWER:

This issue's Feature Creature (pg. 3) is a Longnose Dace, *Rhinichthys cataractae*

Connect with

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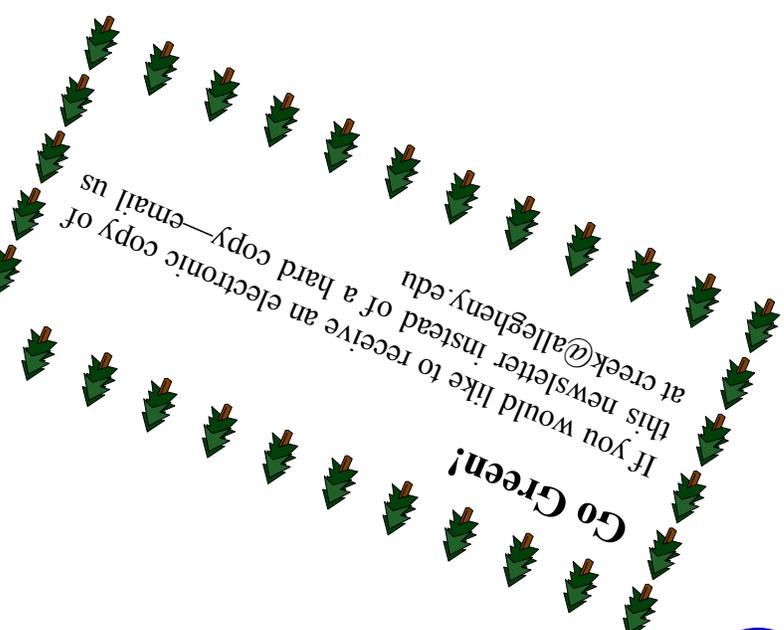
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