

Concerns over didymo in Pine Creek



Fishermen and paddlers in Pine Creek and nearby watersheds in Lycoming, Clinton, Potter and Tioga counties are asked to thoroughly clean their gear when moving between bodies of water to prevent the spread of didymo (“rock snot”) to new locations. Didymo is not a significant human health risk, but it can negatively affect stream food webs and be a nuisance for angling and recreation. It only takes a single cell or a drop of water to transfer it to another stream. It was found in several locations in Pine Creek for the first time in 2013.



Didymo clump from the Delaware River. Photo Tom Daley, PA DEP.



Didymo-covered rocks from the West Branch of Pine Creek above Galeton. Photo Matthew Shank, SRBC.

Didymo is a type of algae called a diatom that grows either as coating on rocks, or in colonies that form stalks. The tan-colored colonies resemble wet toilet paper and look slimy (hence the name “rock snot”) but are not; the stalks form a fibrous weave that feels like wet wool. Didymo is a potential threat to stream ecosystems because it can form dense mats that coat up to 100% of the stream bottom and smother habitat for other species. It may also disrupt the food web by making life difficult for benthic invertebrates like caddis flies and mayflies, which are food for fish like trout. Anglers in impacted areas such as the Delaware River have also reported frustration that fishing lures are easily snagged in the algal mats. Thankfully, these negative situations have not yet been reported for Pine Creek.

Didymo, scientifically known as *Didymosphenia geminata*, is a ‘circumboreal’ algal species, meaning it is typically found in cold, high latitude water. It prefers clean, low nutrient systems. Didymo has recently become established as a nuisance species in streams in New Zealand, the US Rockies, Vermont, New Hampshire, New York, and in the upper Delaware River basin. It is not completely understood if didymo is a truly invasive species, or if it has been a component of the local Pennsylvania ecosystem for a long time, only now making an appearance because conditions are right for it to flourish. How worried should we be about didymo in Pine Creek?

“The best experience we can learn from is from other rivers,” says Susquehanna River Basin Biologist Matt Shank. “The Upper Delaware and the Gunpowder River in Maryland have seen episodic nuisance blooms. It is really tough to predict if didymo will take off; flows and water chemistry are different on those rivers than in Pine Creek.”

Didymo was found in June 2013 in Pine Creek near Waterville. In November 2013, Shank and others noted visible colonies on the West Branch of Pine Creek just above Centertown Lake in Galeton, and didymo cells (though not visibly obvious growth) were identified on Pine Creek one mile below Galeton. It was absent a few miles above Centertown Lake, at Crippen Run Road.

Shank emphasized the importance of cleaning and drying boating and fishing gear to prevent the spread of didymo to other tributaries. “While the mainstem of Pine Creek is considered impacted, we want to keep it out of Cedar Run, Little Pine, and other exceptional value and high quality tributaries.”

“We may not be able to eliminate didymo from an infected waterway, but there are easy steps we can take to slow its spread and to prevent it from spreading to other waters,” said Pennsylvania Fish and Boat Commission Executive Director John Arway.

“Didymo cells can easily be carried downstream and can be picked up by any items which come in contact with the infected water, including fishing tackle, waders, and boats and trailers. We urge anglers and boaters to ‘Clean Your Gear!’ before leaving a water body and entering another one.”

Prevent the spread of didymo as well as other organisms, pathogens and invasives. Restrict your use to one location or if you travel to other locations, be sure to take the following precautions:

- **Check:** Before leaving a site, remove all visible clumps of algae, mud, plants, fish and animals and eliminate water from all equipment. Leave them at the site! If you find any later, treat and put in trash. Never flush.
- **Clean:** Nonabsorbent items with detergent or hot-soak one minute in water above 140° F (60° C) (hotter than most tap water) or for at least 20 minutes in hot water kept above 113° F (45° C) (uncomfortable to touch). Absorbent items require longer soaking times — at least 40 minutes in hot water kept above 113° F (45° C).
- **Dry:** Drying will kill didymo and many other invasives, but moist didymo can survive for months so items must be completely dry to the touch, inside and out and left to dry for at least another 48 hours before use. Freezing any item until solid will also kill didymo.

For more information on how to clean your gear, visit <http://www.fishandboat.com/didymo-poster.pdf>

FAQ's on didymo

Will Didymo become a problem in Pine Creek? How quickly?

This is not an easy question to answer. Researchers are currently working to understand which conditions give didymo the best chance to establish dense colonies, because didymo does not become a nuisance in all locations. Because it exists in upper Pine Creek, it has the potential to establish colonies downstream. At the moment (early 2014), didymo is not visibly apparent in the majority of the mainstem, and has not been identified in any tributaries except the West Branch.

If didymo is already in Pine Creek, why are we being asked to clean our gear?

It is even more important than ever to keep gear clean and prevent the spread of didymo. We would like to prevent its spread to tributaries like Slate Run and Cedar Run, and nearby watersheds like Kettle Creek. Furthermore, there are other invasive species, such as the New Zealand Mud Snail (recently found on Spring Creek in Center County) that have not yet been found in Pine Creek. Proper cleaning and attention to these organisms is critical to preventing them from causing environmental harm.

What does Didymo look like?

Didymo takes on two appearances. The first is a coating on rocks and can look like raised pimples. In other places didymo colonies grow into long tan or yellowish brown stalks, which appear like strands of wet toilet paper or fiberglass. If you squeeze water out of the stalk, it feels like wet wool or moist cotton, and is not slimy.

What should you do if you see something that fits the description of Didymo?

Proper identification of Didymo requires a microscope. It is very difficult to distinguish Didymo from other types of algae in the stream or from photographs. If you find a sample of algal growth that is concerning to you and fits the description above, record the location as best as you can (GPS coordinates and site description would be best). If the algae is attached to your gear and not the stream bottom, put it in a glass vial and fill with ethanol or rubbing alcohol. We don't suggest that anyone purposely remove biological material from the stream. Contact your local watershed specialist, or Lori Maloney at the Tioga County Conservation District. She can be reached at 570-724-1801 x 113 or lmaloney (at) tiogacountypa.us and can refer the case to the appropriate contact at SRBC or DEP.

How should I clean my gear to prevent Didymo from spreading?

The best precaution to eliminate didymo is to check all boating, fishing, or other equipment upon leaving the water, scrubbing, and drying before re-use. Any visible clumps of material should be left on site, or disposed in the trash-**don't** flush down the drain. An easy, effective cleaning method is to soak gear in a 5% dish detergent solution for 2 minutes (Green Works detergent works well and is easy on the environment). However, absorbent gear like felt bottomed waders require more effort: soak gear in hot (>140°F) water for 40 minutes, or 30 minutes if water is mixed with 5% dishwashing detergent solution and kept above 115°F. Another effective means of disinfection is to freeze gear until all moisture is frozen solid, or allow gear to completely dry, and let it dry for another 48 hours. Some anglers find that switching to a different, dry pair of waders before entering a different watershed is a convenient method. For more information on didymo, visit http://www.paseagrant.org/wp-content/uploads/2013/10/Didymo2013_reduced.pdf

Who is working on didymo and aquatic invasive species?

In Pennsylvania, the Pennsylvania Fish and Boat Commission, Pennsylvania Department of Environmental Protection, Susquehanna River Basin Commission, Pennsylvania Sea Grant, and Delaware River Basin Commission have been active in either monitoring waterways, doing research to understand the spread of didymo and other species, and publishing materials on how to prevent the spread of aquatic invasive species. Please see their links below.

The Pine Creek Watershed Council is involved in efforts to educate anglers and boaters about didymo and aquatic invasive species. Please contact the council if you would like to participate by

distributing or accepting free flyers, educational placemats, and drink coasters about didymo, or if you would be interested in hosting a boot washing station.

Links about Didymo

PA Fish and Boat Commission's Didymo Fact Sheet <http://www.fishandboat.com/didymo-poster.pdf>

PA Fish and Boat Commission 2013 Didymo press release State Agencies Issue Alert to Contain Invasive Species in Lycoming County, Press Release, 7/11/13.
<http://fishandboat.com/newsreleases/2013press/invasive-lycoming.htm>

Pennsylvania Sea Grant's Didymo Factsheet http://www.paseagrant.org/wp-content/uploads/2013/10/Didymo2013_reduced.pdf

Delaware River Basin Commission's Didymo web page (numerous links to other agencies)
http://www.state.nj.us/drbc/home/spotlight/approved/20120531_didymo.html

Sanchez, Jessica Rittler, Concern Over "Rock Snot" Stimulates Additional Study by DRBC, New Jersey Section of the American Water Resources Association Aquaduct (Newsletter), Winter 2013.
<http://www.nsawra.onefireplace.org/rocksnot>

Article comparing decontamination methods to prevent Didymo spread. Didymo Control: Root and O'Reilly, Increasing the Effectiveness of Decontamination Strategies and Reducing Spread Rock snot, *Didymosphenia geminata*, didymo— Fisheries Magazine Oct 2012 p. 440-448.

http://fisheries.org/docs/fisheries_magazine_archive/fisheries_3710.pdf



Didymo collected from Pine Creek, June 2013. Photo by Mel Zimmerman, Lycoming College Clean Water Institute.