Title: CONCERN OVER "ROCK SNOT" STIMULATES ADDITIONAL STUDY BY DRBC

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SUMMARY:

On April 18, 2012, Dr. Erik Silldorff, an aquatic biologist with the Delaware River Basin Commission (DRBC), was surprised to see extensive mats of the invasive, aquatic alga *Didymosphenia geminata* (also known as Didymo or "Rock Snot") in the Delaware River near Matamoras, Pike County, Pa. Further examination led to the discovery of large blooms of Didymo occurring over a 40-mile stretch of the Delaware River, extending from the area near the confluence with the Lackawaxen River downstream to the vicinity of Dingmans Ferry Bridge. Subsequent surveys have confirmed that that Didymo is present throughout the entire 200-mile non-tidal portion of the Delaware River and into several tributaries.

While Didymo is not a public health hazard, there is great ecological concern with discovering the invasive alga to this extent and in these concentrations. Thick mats of Didymo can crowd out or smother more biologically valuable algae growing on the riverbed, thereby significantly altering the physical and biological conditions within a stream. Additionally, Didymo can easily hitchhike its way into nearby streams or rivers that currently lack the unwanted invader. This is alarming given that there are many cold, low-nutrient streams in the Delaware Basin and surrounding areas. Keeping Didymo out of such streams is critically important because once Didymo is found in a body of water there is no known way to fully eradicate it.

DRBC received an award from Pennsylvania Sea Grant in August 2012 to help delineate the threats from the expanding Didymo invasion and provide the global community of scientists with a better understanding of how nutrients may impact the alga's morphology. During surveys, Dr. Silldorff noticed that while the diatom was extensive throughout the non-tidal Delaware River, its form was notably different in the higher nutrient waters below the Lehigh River, lacking the long stalk seen in the lower nutrient waters upstream. Starting in February 2013, DRBC will perform additional surveys and transplant colonized rocks to investigate the impact of different water chemistry on stalk morphology.

FULL ARTICLE:

On April 18, 2012, Dr. Erik Silldorff, an aquatic biologist with the Delaware River Basin Commission (DRBC), was surprised to see extensive mats of the invasive, aquatic alga *Didymosphenia geminata* (also known as Didymo or "Rock Snot") in the Delaware River near Matamoras, Pike County, Pa. Further examination led to the discovery of large blooms of Didymo occurring over a 40-mile stretch of the Delaware River, extending from the area near the confluence with the Lackawaxen River downstream to the vicinity of Dingmans Ferry Bridge. This section of river includes portions of two National Park units: the Upper Delaware Scenic and Recreational River and the Delaware Water Gap National Recreation Area.

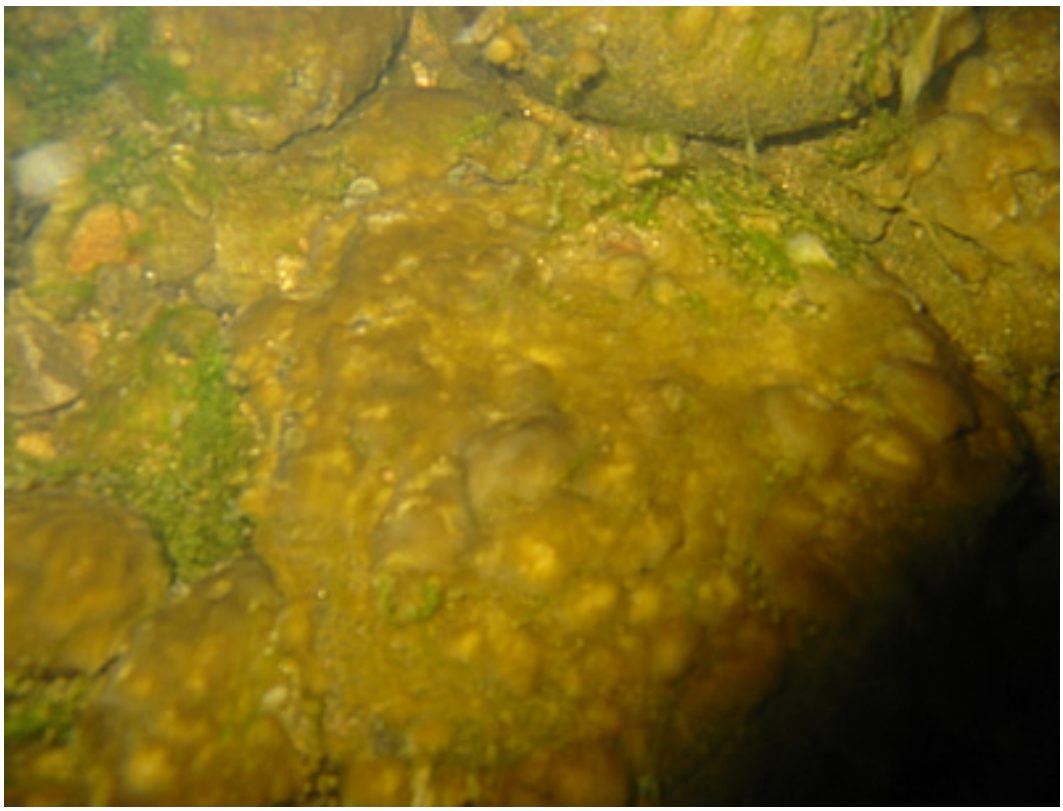
1 Photo of Didymo on a rock's surface near Matamoras, Pa. taken by E. Silldorff 4/18/2012.

Subsequent surveys by scientists with the National Park Service and the Pennsylvania Department of Environmental Protection independently documented Didymo blooms extending north of the area discovered by Dr. Silldorff to Callicoon, N.Y., as well as from Long Eddy, N.Y. upstream into the East and West branches of the Delaware River. Partner agencies also identified populations in Dyberry Creek in Pennsylvania and Flat Brook in New Jersey, two tributaries to the Delaware River. In May 2012, DRBC staff confirmed the presence of Didymo south from the Delaware Water Gap National Recreation Area all the way to Trenton, N.J.

In each locale, biologists noted that the intensity was variable, with some areas densely covered, while others had only relatively small patches. Regardless, these findings indicated that Didymo is present throughout the entire 200-mile non-tidal portion of the Delaware River and into several tributaries.

"We knew Didymo occurred in the river," Dr. Silldorff said, "but the spatial extent and intensity of this bloom was alarming given its potentially detrimental effect on ecosystems and the ease in which it can be spread to nearby tributaries."

A single-celled type of algae in the group known as diatoms, Didymo prefers cold, moderate to fast flowing, low nutrient waters, in which it blankets rock surfaces, streambeds, and aquatic plants with thick mats of long, stalked material. Since 2007, Didymo has been found in the Delaware River at low concentrations during the summer months from around Hancock, N.Y., downstream to the area around Dingmans Ferry, Pa., with high-density patches frequently observed in the cold-water zones of the river's East and West branches, as well as in the colder zones of its upper main stem.



2 Photo of Didymo on underwater rock surfaces near Milford, Pa., taken by E. Silldorff 4/18/2012.

While Didymo is not a public health hazard, there is great ecological concern with discovering the invasive alga to this extent and in these concentrations. Thick mats of Didymo can crowd out or smother more biologically valuable algae growing on the riverbed, thereby significantly altering the physical and biological conditions within a stream.

Additionally, Didymo can easily hitchhike its way into nearby streams or rivers that currently lack the unwanted invader. This is alarming given that there are many cold, low-nutrient streams in the Delaware Basin and surrounding areas. Keeping Didymo out of such streams is critically important, because once Didymo is found in a body of water, there is no known way to fully eradicate it.

Didymo spreads naturally as its stalks lengthen and shred off into the waterbody, traveling downstream and reattaching to other rock surfaces and streambed material. However, the main culprit is humans, as Didymo attaches easily to recreational equipment: fishing gear (particularly felt-soled boots), kayaks, boats, life jackets, neoprene wet suits, etc. The most important thing is containment, which can be done by educating the public to decontaminate their gear after use in a waterbody where Didymo is known to exist or encourage, when feasible, restricting equipment use to a single waterway.

Steps Taken and Future Plans

Immediately following April's discovery, DRBC staff coordinated with scientists from Pennsylvania, New York, New Jersey, and the National Park Service to alert the public and identify appropriate next steps. A press conference was held and news releases were issued to discuss the presence of Didymo and how best to restrict its spread to other water bodies. Follow-up surveys to monitor the bloom's locations and densities were completed in the late spring and summer.

In June 2012, Dr. Silldorff participated in a webinar hosted by the New Jersey Department of Environmental Protection, where he explained his findings, the associated risks, and the decontamination procedures required to limit Didymo's spread. The webinar can be viewed at http://www.nj.gov/dep/wms/bfbm/didymo.html.

DRBC received an award from Pennsylvania Sea Grant in August 2012 to help delineate the threats from the expanding Didymo invasion and provide the global community of scientists with a better understanding of how nutrients may impact the alga's morphology. During surveys, Dr. Silldorff noticed that while the diatom was extensive throughout the non-tidal Delaware River, its form was notably different in the higher nutrient waters below the Lehigh River, lacking the long stalk seen in the lower nutrient waters upstream. Starting in February 2013, DRBC will perform additional surveys and transplant colonized rocks to investigate the impact of different water chemistry on stalk morphology.

For more details, including additional information on Didymo and how to properly clean recreational equipment, please visit http://www.nj.gov/drbc/home/spotlight/approved/20120531_didymo.html.

The DRBC is a federal/interstate government agency responsible for managing the water resources within the 13,539 square-mile Delaware River Basin. The five commission members are the governors of the basin states (Delaware, New Jersey, New York, and Pennsylvania) and the commander of the U.S. Army Corps of Engineers' North Atlantic Division, who represents the federal government.