

DO-WAH-DIDYMO

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"THERE IT WAS JUST GROWIN' IN THE STREAM
SINGIN' DO WAH DIDDY, DIDDY, DUM DIDYMO!"

I'm willing to bet Manfred Mann, the musical group who earned the number one spot on the U.S. Billboard Hot 100 chart in the 1960s for their single "Do-Wah-Diddy" never would have thought their song could be spun into a reference for didymo.

For *what*?

You know, rock snot...boulder boogers.

What?

Okay, enough with the nicknames. Didymo (*Didymosphenia geminata*) is one of at least 100,000 different species of single-celled algae called diatoms.

In South Dakota, didymo was first noticed in the Black Hills' Rapid Creek in 2002 near the town of Hisega. It grows on rocks in streams and in severe cases can cover entire stream bottoms. The dense didymo mats caused great concern after its first appearance due to the affect it might have on water quality, trout and the aquatic community. Since 2002, didymo has only been found in two South Dakota waters; Rapid Creek and a small area of Castle Creek in the Black Hills.

Where did didymo come from; how did it get there? These are great questions, but unfortunately there is no perfect answer. It comes down to two possibilities: it is native and has always been there or it was introduced from somewhere else.

How would we know? Microscopic diatoms are not often the center of attention for biologists. Didymo is no exception; a good historical record of didymo in Rapid Creek does not exist. It was never looked for before the first blooms appeared in 2002. Another way to determine if didymo is native is to look at didymo fossils. This algae was proven to be native in other areas

of the U.S. and Canada using fossil records. However, didymo fossil surveys have not yet been carried out for the Black Hills.

Wait a second—if didymo first appeared in 2002 that means it was introduced around then, otherwise we would have seen it before, right?

Not necessarily!

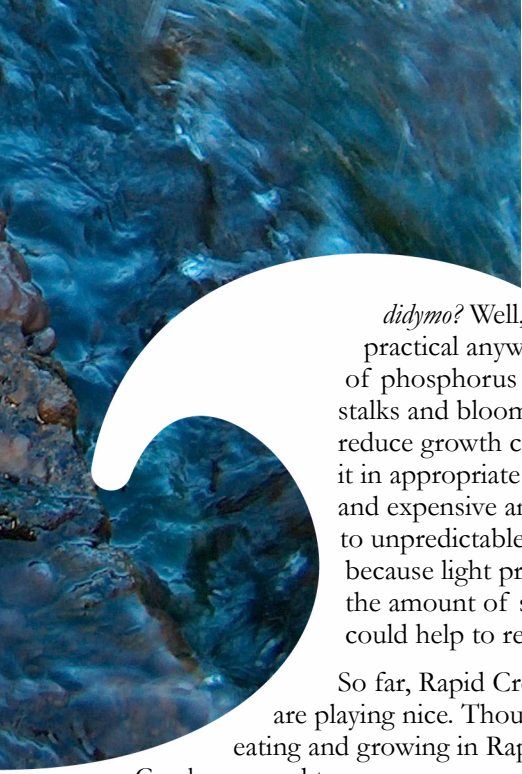
Didymo can exist in two forms: with or without a stalk. Specific conditions must exist for it to grow stalks and "bloom" (stalks make up the bulk of didymo mats). The best research so far determines that for didymo to bloom, it needs a lot of light and very low amounts of the nutrient phosphorus in the stream. In conditions of very low light and high amounts of phosphorus, didymo isn't likely to bloom. Because of the geology and chemical processes above Pactola dam, phosphorus is not readily available in Rapid Creek below the dam, which makes conditions in Rapid Creek below Pactola Reservoir perfect for didymo. It is

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possible didymo has always been in Rapid Creek, but environmental conditions changed, leading to its blooming behavior.

How does didymo affect trout and other organisms? The major food source for trout is invertebrates (bugs!). In areas with lots of didymo,

there are few large insects (mayfly and caddisfly larvae) and a great amount of small insects (midge larvae). In areas without didymo, the opposite is true. It was thought when trout get fewer calories from eating mostly small insects, it could affect important factors



such as growth and energy (fat) reserves. Trout from Rapid Creek do feed on smaller insects compared to trout from other streams, but they eat *lots* of it. Trout from Rapid Creek are just as well-fed and healthy as other trout.

What can we do to manage didymo? Well, maybe nothing...nothing practical anyway. Because low amounts of phosphorus causes didymo to grow stalks and bloom, adding phosphorus to reduce growth could work, but adding it in appropriate amounts is difficult and expensive and would likely lead to unpredictable problems. However, because light promotes blooms, limiting the amount of sunlight to the stream could help to reduce growth.

So far, Rapid Creek's boulder boogers are playing nice. Though trout are eating and growing in Rapid

Creek, we need to remember the amount of didymo in Rapid Creek is relatively mild. While it covers about 30 percent of the stream bottom, it could be worse. In New Zealand, didymo covers 100 percent, in a mat several inches thick! Think about how a trout would swim and find food in that.

Cleaning and drying hiking and fishing gear is the best way to prevent the introduction of didymo and other invasive species to other waters. New areas might have the right conditions for invasive species to take over. It is time for us to sing a different tune...“do wah diddy, diddy, dum, diddy-NO!” ■

Author note: Dan is currently a biologist with the U.S. Fish and Wildlife Service. He completed his Ph.D. dissertation about the influence of didymo on trout and the aquatic community of Rapid Creek in 2011.

