Special Session on *Didymosphenia geminata*
Western Division American Fisheries Society Meeting
May 15-16, 2006 Bozeman, Montana
REVISED Post meeting update

Over 60 scientists and aquatic managers from across the US, western Canada, New Zealand, England, and Iceland gathered to exchange information and discuss new findings at the special symposium in Bozeman. The symposium offered the opportunity for people to meet, develop ideas and collaborations, and to express concerns about the impacts of didymo.

We thank the Federation of Fly Fishers, US Environmental Protection Agency, the Trout and Salmon Foundation, the Black Hills Fly Fishers, and the Overmountain Chapter of Trout Unlimited for making the symposium a success.

Notable results

- Barry Biggs, NIWA, showed convincing data on the wide ecological and hydrological tolerance of didymo in New Zealand. Didymo was shown to form high biomass under low – high (1.5 m/sec) water velocities. Barry reported on the stream trials to control didymo. It is clear that didymo can not be eradicated from streams once it has invaded. The best hope is for controlling its biomass accrual in restricted areas where values are high, mitigating the size of blooms, and preventing the spread.

- Barry also presented New Zealand Fish and Game photos and video of a didymo bloom of Mararoa River in December 2005 that left many of the audience stunned. The rates of growth and biomass accumulation in the Mararoa have not been seen in other parts of the world.

- Christina Vieglais, Biosecurity New Zealand, described the national incursion response to didymo launched by the New Zealand government, warranted by the economic impact of didymo to NZ. Impacts of between NZ $57 – 285 million over eight years have been estimated. The impacts are due to loss to commercial eel fisheries, water supplies, tourism, and biodiversity values.

- Max Bothwell, Environment Canada, proposed that the spread of didymo on Vancouver Island is the result of the development of waders with felt soles and increased travel by anglers to fish geographically distant rivers. Many participants echoed the sentiment that felt-soled waders are one of the highest risk vectors in the spread of didymo on a global scale.

- Andrea Kirkwood, University of Calgary, sampled dozens of sites in Alberta on a monthly basis and finds didymo mainly in sites where flow and temperature is regulated by dams. These findings are in agreement with initial findings that show didymo appearing at

nuisance levels downstream of dams in both the Red Deer and Bow rivers.

- Kris McNyset, US Environmental Protection Agency, presented results of ecological niche models to predict sites that are at risk for spread by didymo. Her results indicate that rivers in Chile, Peru, and Argentina are potential sites of spread. Combined with the observations by Bothwell of anglers traveling to fish such rivers, there is great risk to South American rivers.

- Ingi Rúnar Jónsson Institute of Freshwater Fisheries Iceland, showed the record of expansion of didymo in rivers on the island of Iceland 1990s. Populations of didymo have decreased, or remained stable, since that time. The impact on salmon fisheries had not been determined and was difficult to separate from other oceanic factors on populations.

- Sarah Spaulding, US Geological Survey, documented the distribution of didymo in North America. The diatom is widespread in the west, but the distribution of persistent nuisance blooms is primarily downstream of dams. Reports of nuisance blooms are increasing in the eastern US states of Virginia, Tennessee, and Arkansas. There is some indication that other diatoms (*Cymbella mexicana* var. *janischii, Gomphoneis* spp.) are increasingly forming masses in rivers, pointing to environmental change.

- Martyn Kelly, Bowburn Consultancy in the United Kingdom, reported that streams in the north and west of the UK are subject to large masses of didymo, but these are considered to be a natural phenomenon as it has been recorded in these areas for over 150 years. There are no reports of spreading in recent years in the UK. Large masses have been reported in several other parts of Europe (especially the Alps and Carpathians) and in some cases, nuisance growths have been recorded in rivers with no previous records.

- Michael Gretz, Michigan Technical University, presented results on the chemical and physical composition of the didymo stalk. The problems with didymo are not the results of the cells, but of the copious production of mucopolysaccaride stalk.

- Participants of the conference were asked to bring samples of didymo to contribute to a study funded by Biosecurity New Zealand to determine the genetic "relatedness" of global populations and to determine if there is a genetic variant as the source of the spread.

Position Statement

Approximately 35 participants of the special session met on Tuesday May 16 to discuss the results of the previous day's session and develop recommendations for action.

The group discussed various options and reached the conclusion that a "white paper" presented to funding agencies, water managers, and political representatives is a necessary step in drawing attention to the problem and stopping the spread of didymo.

As a result of the group discussion, Sarah Spaulding and Leah Elwell completed a white paper, "Increase in nuisance blooms and geographic expansion of the freshwater diatom *Didymosphenia geminata"*. This white paper is on the EPA website.

Education and Outreach

In 2005, 95% of the freshwater users of the South Island of New Zealand knew about didymo, yet it is hardly recognized within the general populace of North America and Europe. The group agreed for the need to use existing organizations for outreach and education on the importance and methods for decontamination of aquatic gear to slow, or stop the national and international spread of didymo.

Although presentations at scientific meetings are important to gain the attention of the science community, they were acknowledged as secondary to educating the public.

The "Stop Aquatic Hitchhikers" Program was identified as an important existing organization dedicated to the broad scope of aquatic invasive species. Since the Montana meeting, the website has posted didymo notices, including a link to the video from Fish and Game New Zealand.
http://www.protectyourwaters.net/
http://www.protectyourwaters.net/news/display.php?id=4435

The Aquatic Nuisance Task Force is a US intergovernmental organization dedicated to preventing and controlling aquatic nuisance species. Sarah Spaulding contacted USGS and EPA members of the task force in early June to notify them of the threat of didymo and request assistance in responding.
http://www.anstaskforce.gov

The Federation of Fly Fishers is developing a web based resource for informing anglers about didymo.
www.fedflyfishers.org/

Sarah Spaulding and Max Bothwell drafted a flyer as an international alert to be distributed to fishing guides and South American governmental agencies. It is currently in review.

New Records

The group expressed the need for tracking the distribution of confirmed distribution of didymo from international sites. Karl Hermann, US EPA, agreed to continue adding to the worldwide database and map.

25 June 2006, Confirmed reports of nuisance blooms of *Didymosphenia geminata* in the Po and Variata Rivers in Italy.